

RELEVANT HITS

Dear Examiner Sorey:

Attached are the search results for application #10/715,633 "METHOD AND SYSTEM OF ESTIMATING VEHICLE DAMAGE."

This document contains the relevant hits and the entire search (the relevant hits are highlighted in yellow).

If you use Microsoft Word's "FIND" function (Ctrl+F) on the ^ character (shift 6) it will take you to the relevant hits.

If you have any questions, please don't hesitate to call, or e-mail.

Sincerely,

Christian Miner, MLIS
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~~Non- Patent Literature Abstracts

[File 6] NTIS 1964-2008/Dec W1

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[File 266] FEDRIP 2008/Oct

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Set	Items	Description
S1	12184	S (DELTA OR CHANGE OR DIFFERENCE OR VARIANCE) (5N) (VELOCITY OR ACCELERATION OR MOMENTUM)
S2	15718	S (ESTIMATE? ? OR ESTIMATING OR PREDICT??? OR APPROXIMAT??? OR BALLPARK OR GAUG??? OR PROJECT???) (5N) (DAMAGE? ? OR DESTRUCTION OR DEVASTATION OR WRECKAGE)
S3	0	S S1 (5N) S2
S4	11	S S1 (S) S2
S5	2009909	S DELTA OR CHANG??? OR DIFFERENCE OR VARIANCE
S6	603540	S VELOCITY OR ACCELERATION OR MOMENTUM
S7	3060720	S ESTIMATE? ? OR ESTIMATING OR PREDICT??? OR APPROXIMAT??? OR BALLPARK OR GAUG??? OR PROJECT???
S8	379987	S DAMAGE? ? OR DESTRUCTION OR DEVASTATION OR WRECKAGE
S9	34967	S S5 (15N) S6
S10	28788	S S7 (15N) S8
S11	79	S S9 AND S10
S12	63	RD (unique items)
S13	52	S S12 NOT S4
S14	29	S S13 NOT PY>2003

4/5/1 (Item 1 from file: 6) [Links](#)

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1780655 NTIS Accession Number: N94-16837/4

Low and High Velocity Impact Response of Thick Hybrid Composites

Hiel, C. ; Ishai, O.

National Aeronautics and Space Administration, Moffett Field, CA. Ames Research Center.

Corporate Source Codes: 019045001; NC473657

31 May 93 11p

Language: English

Journal Announcement: GRAI9406; STAR3203

In Texas Univ., Effect of Impact Damage and Open Hole on Compressive Strength of Hybrid Composite Laminates p 1149-1159.

NTIS Prices: (Order as N94-16836/6, PC A05/MF A01)

Country of Publication: United States

The effects of low and high velocity impact on thick hybrid composites (THC's) were experimentally compared. Test Beams consisted of CFRP skins which were bonded onto an interleaved syntactic foam core and cured at 177 C (350 F). The impactor tip for both cases was a 16 mm (0.625 inch) steel hemisphere. In spite of the order of magnitude difference in velocity ranges and impactor weights, similar relationships between impact energy, damage size, and residual strength were found. The dependence of the skin compressive strength on damage size agree well with analytical open hole models for composite laminates and may enable the prediction of ultimate performance for the damaged composite, based on visual inspection.

Descriptors: *Carbon fiber reinforced plastics; *Hybrid composites; *Impact damage; Impact tolerances; Residual strength; Beams (Supports); Compressive strength; Foams; Hole geometry (Mechanics); Performance prediction; Sandwich structures

Identifiers: NTISNASA

Section Headings: 71F (Materials Sciences--Composite Materials); 41K (Manufacturing Technology--Engineering Materials)

4/5/2 (Item 1 from file: 8) [Links](#)

Ei Compendex(R)

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0017962564 E.I. COMPENDEX No: 20074010844053

Evaluation of damage for alumina/graphite refractory using apparent sonic velocity measurement

Issue Title: Innovation in Ceramic Science and Engineering

Furushima, Ryoichi; Matsuo, Yohtarō; Shiota, Tadashi; Yasuda, Kouichi

Corresp. Author/Affil: Furushima, R.: Department of Metallurgy and Ceramics Science, Tokyo

Institute of Technology, 2-12-1 Ookayama, Meguro-ku, Tokyo 152-8552, Japan

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kyasuda@ceram.titech.ac.jp

Key Engineering Materials (Key Eng Mat) (Switzerland) 2007 352/- (31-34)

Publication Date: 20071009

Publisher: Trans Tech Publications Ltd

CODEN: KEMAE ISSN: 1013-9826

Document Type: Conference Paper; Journal Record Type: Abstract

Treatment: T; (Theoretical)

Language: English Summary Language: English

Number of References: 3

Damage evaluation for alumina/graphite refractory was conducted under uni-axial compressive loading. Apparent sonic velocity during a loading-unloading cycle was measured by ultrasonic method. Quasi-elastic-plastic behavior was observed in the stress-strain curve for each cycle. However, it is difficult to detect damage from the stress-strain curve during each loading- unloading cycle. On the other hand, using the result of change in apparent sonic velocity during a loading-unloading cycle, it is possible to estimate damage to some extent. The apparent sonic velocity kept approximately constant during the first loading process, but it decreased remarkably during the first unloading one. In the subsequent loading-unloading cycles, it increased in the loading process and decreased in the unloading one. Consequently, it is concluded that damage mechanism during the first loading-unloading cycle is different from that during the subsequent loading- unloading cycles for alumina/graphite refractory.

Descriptors: Alumina; Compressive stress; Damage detection; Graphite; Loading; Stress-strain curves; Ultrasonic measurement; Velocity measurement ; *Refractory alloys

Identifiers: Alumina/graphite refractories; Apparent sonic velocity; Damage evaluation; Loading-unloading cycle

Classification Codes:

943.3 (Special Purpose Instruments)

941.2 (Acoustic Variables Measurements)

804.2 (Inorganic Compounds)

753.1 (Ultrasonic Waves)

691.2 (Materials Handling Methods)

482.2 (Minerals)

408.1 (Structural Design, General)

531 (Metallurgy & Metallography)

421 (Strength of Building Materials; Mechanical Properties)

4/5/3 (Item 2 from file: 8) [Links](#)

Ei Compendex(R)

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0017055558 E.I. COMPENDEX No: 2006169825005

Thermal stability of an alumina-based refractory

Volkov-Husovic, T.; Majstorovic, J.; Cvetkovic, M.

Corresp. Author/Affil: Volkov-Husovic, T.: University of Belgrade, Faculty of Technology and Metallurgy, Metallurgical and Engineering Dept., Belgrade, Yugoslavia

American Ceramic Society Bulletin (Am. Ceram. Soc. Bull.) (United States) 2006 85/3 (xx-xxx)

Publication Date: 20060424

Publisher: American Ceramic Society

CODEN: ACSBA ISSN: 0002-7812 eISSN: 0002-7812

URL: <http://www.ceramicbulletin.org/cbpc/Mar06/Volkov.pdf>

Document Type: Article; Trade Journal Record Type: Abstract

Treatment: X; (Experimental)

Language: English Summary Language: English

Number of References: 15

The thermal stability, dynamic Young's modulus of elasticity, anisotropy and damage level of a 42% alumina refractory material were investigated using a water-quench test. Thermal quenching of refractories leads to crack nucleation and propagation, which result in loss of strength. Ultrasonic velocity and strength change in the sample in two directions was used to describe the anisotropy of the sample and its influence on the thermal shock resistance of the material. The study suggests that the results of the sonic measurements could be used for prediction of damage level in samples caused by thermal shock.

Descriptors: Alumina; Aluminous refractories; Elastic moduli; Elasticity; Nucleation; Quenching; Water; *Thermodynamic stability

Identifiers: Alumina-based refractory; Thermal quenching; Thermal shocks; Water-quench test

Classification Codes:

933.1.2 (Crystal Growth)

537.1 (Heat Treatment Processes)

641.1 (Thermodynamics)

804.2 (Inorganic Compounds)

812.1 (Ceramics)

931.1 (Mechanics)

4/5/4 (Item 3 from file: 8) [Links](#)

Ei Compendex(R)

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0015554103 E.I. COMPENDEX No: 2003307557218

Damage development in small blocks

Katsabanis, P.D.; Kunzel, G.; Pelley, C.; Kelebek, S.

Conference Title: Proceedings of the Twenty-Ninth Conference on Explosives and Blasting Technique

Conference Location: Nashville, TN United States Conference Date: 20030202-20030205

Sponsor: International Society of Explosives Engineers

E.I. Conference No.: 61169

Proceedings of the Annual Conference on Explosives and Blasting Technique (Proc Conf Explos Blast Tech) (United States) 2003 II/- (363-374)

Publication Date: 20030722

Publisher: International Society of Explosives Engineers

CODEN: PCETD ISSN: 0732-619X

Document Type: Conference Paper; Conference Proceeding Record Type: Abstract

Treatment: T; (Theoretical)

Language: English Summary Language: English

Number of References: 8

Small blocks of granodiorite have been subjected to blast loads from a single borehole and from a series of boreholes detonating at various timing intervals. The damage of the blocks was assessed through P-wave velocity monitoring, measuring the change of the point load strength index of the rock after dividing the large blocks into smaller ones and measuring the work index of the material at different distances away from the blasthole. Numerical modelling with the Autodyn(TM) code enabled visualization of damage. It was shown that damage is optimum at a small delay time between

successive holes while it drops rather drastically after this point. Grinding resistance was affected at the higher damage levels, achieved with higher explosives loading. The estimated value of the damage variable, which would correspond to appreciable (larger than 10%) reduction of grinding resistance, was found to be approximately equal to 0.45 for the material tested.

Descriptors: Boreholes; Explosives; Grinding (comminution); Loads (forces); Rocks; *Blasting

Identifiers: Grinding resistance

Classification Codes:

502.1 (Mine & Quarry Operations)

501.1 (Exploration & Prospecting Methods)

481.1 (Geology)

802.3 (Chemical Operations)

405.2 (Construction Methods)

404.1 (Military Engineering)

421 (Strength of Building Materials; Mechanical Properties)

408 (Structural Design)

4/5/5 (Item 4 from file: 8) [Links](#)

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0015111150 E.I. COMPENDEX No: 2002266988250

An analysis of stress waves in 12Cr steel, Stellite 6B and TiN by liquid impact loading

Lee, Min-Ku; Kim, Whung-Whoe; Rhee, Chang-Kyu; Lee, Won-Jong

Corresp. Author/Affil: Lee, M.-K.: Adv. Nuclear Materials Department, Korea Atomic Energy Res. Institute, Taejon 305-353, Korea, Republic of

Nuclear Engineering and Design (Nucl Eng Des) (United Kingdom) 2002 214/3 (183-193)

Publication Date: 20020627

Publisher: Elsevier Ltd

CODEN: NEDEA ISSN: 0029-5493

Publisher Item Identifier: S0029549302000535

Item Identifier (DOI): [10.1016/S0029-5493\(02\)00053-5](https://doi.org/10.1016/S0029-5493(02)00053-5)

Document Type: Article; Journal Record Type: Abstract

Treatment: T; (Theoretical); X; (Experimental)

Language: English Summary Language: English

Number of References: 19

This research placed emphasis on the computer simulated stress distribution on the surface and in the bulk of the materials which are subjected to the water impact causing erosion damage. The erosion damage was predicted by evaluating the spatial and temporal stress wave distribution generated by water impact pressure on 12Cr steel and Stellite 6B as steam turbine materials and TiN as a hard coating material. There were two distinctive stress wave behaviors. Firstly, the large tensile stress at the surface was developed by the Rayleigh wave component which appeared between the water drop and the Rayleigh wave front. After the Rayleigh wave detached from the water drop, the materials were in the tensile stress state which could be related to fracture initiation. Secondly, the largest tensile stress in the bulk was near the surface due to the Rayleigh wave generated at the surface and decreased due to the enlargement of wave front as the radial distance increased. Rayleigh wave's shape was broadened due to the difference between the contact point velocity and the wave front velocity, while its value decayed exponentially in the depth direction. Also, there may be a tendency to produce a circumferential crack by $\sigma_{\theta\theta}$ near the surface and a lateral crack by

sigma SUB zz in the sub-surface. The tensile stresses in TiN were much lower than those in 12Cr steel and Stellite 6B due to its higher wave velocity. (c) 2002 Published by Elsevier Science B.V.

Descriptors: Chromium; Computer simulation; Crack initiation; Erosion; Fracture; Impact testing; Loading; Rayleigh scattering; Stainless steel; Steam turbines; Stellite; Stress concentration; Surface chemistry; Tensile stress; Titanium nitride; *Nuclear power plants

Identifiers: Water impact loadings

Classification Codes:

804.2 (Inorganic Compounds)

801.4 (Physical Chemistry)

723.5 (Computer Applications)

617.2 (Steam Turbines)

549.3 (Others, incl. Bismuth, Boron, Cadmium, Cobalt, Mercury, Niobium, Selenium, Silicon, Tellurium)

545.3 (Steel)

543.1 (Chromium & Alloys)

408.1 (Structural Design, General)

711 (Electromagnetic Waves)

613 (Nuclear Power Plants)

421 (Strength of Building Materials; Mechanical Properties)

4/5/6 (Item 5 from file: 8) [Links](#)

Ei Compendex(R)

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0014858027 E.I. COMPENDEX No: 2001346622416

Damage diagnosis using time series analysis of vibration signals

Sohn, H.; Farrar, C.R.

Corresp. Author/Affil: Sohn, H.: Engineering Analysis Group (ESA-EA), M/S P946 Los Alamos Natl. Laboratory, Los Alamos, NM 87545, United States

Corresp. Author email: sohn@lanl.gov

Smart Materials and Structures (Smart Mater Struct) (United Kingdom) 2001 10/3 (446-451)

Publication Date: 20010727

Publisher: Institute of Physics Publishing

CODEN: SMSTE ISSN: 0964-1726

Publisher Item Identifier: S0964172601228110

Item Identifier (DOI): [10.1088/0964-1726/10/3/304](https://doi.org/10.1088/0964-1726/10/3/304)

Document Type: Article; Journal Record Type: Abstract

Treatment: T; (Theoretical)

Language: English Summary Language: English

Number of References: 10

A novel time series analysis is presented to locate damage sources in a mechanical system, which is running in various operational environments. The source of damage is located by solely analyzing the acceleration time histories recorded from a structure of interest. First, a data normalization procedure is proposed. This procedure selects a reference signal that is 'closest' to a newly obtained signal from an ensemble of signals recorded when the structure is undamaged. Second, a two-stage prediction model (combining auto-regressive (AR) and auto-regressive with exogenous inputs (ARX) techniques) is constructed from the selected reference signal. Then, the residual error, which is the difference between the actual acceleration measurement for the new signal and the prediction

obtained from the AR-ARX model developed from the reference signal, is defined as the damage-sensitive feature. This approach is based on the premise that if there were damage in the structure, the prediction model previously identified using the undamaged time history would not be able to reproduce the newly obtained time series measured from the damaged structure. Furthermore, the increase in residual errors would be maximized at the sensors instrumented near the actual damage locations. The applicability of this approach is demonstrated using acceleration time histories obtained from an eight degrees-of-freedom mass-spring system.

Descriptors: Degrees of freedom (mechanics); Time series analysis; Vibrations (mechanical);

*Structural analysis

Identifiers: Structural health monitoring (SHM)

Classification Codes:

408.1 (Structural Design, General)

922.2 (Mathematical Statistics)

931.1 (Mechanics)

4/5/7 (Item 6 from file: 8) [Links](#)

Ei Compendex(R)

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0012813709 E.I. COMPENDEX No: 1992020413007

Low- and high-velocity impact response of sandwich panels with syntactic foam core

Issue Title: Recent Advances in Structural Mechanics - 1991

Hiel, Clement; Ishai, Ori

Corresp. Author/Affil: Hiel, Clement: NASA Ames Research Cent, Moffett Field, United States

Conference Title: Winter Annual Meeting of the American Society of Mechanical Engineers

Conference Location: Atlanta, GA, USA Conference Date: 19911201-19911206

Sponsor: ASME, Advanced Energy Systems Div

E.I. Conference No.: 15922

American Society of Mechanical Engineers, Pressure Vessels and Piping Division (Publication)

PVP (ASME Pressure Vessels Piping Div Publ PVP) 1991 225/- (137-141)

Publication Date: 19911201

Publisher: Publ by ASME

CODEN: AMPPD ISSN: 0277-027X ISBN: 0791808998; 9780791808993

Document Type: Conference Paper; Conference Proceeding Record Type: Abstract

Treatment: T; (Theoretical); X; (Experimental)

Language: English Summary Language: English

Number of References: 7

The effects of low- and high-velocity impacts on composite sandwich panels were experimentally compared. Test Beams consisted of CFRP skins which were bonded onto an interleaved syntactic foam core and cured at 177(deg)C (350(deg)F). The impactor tip, for both cases was a 16 mm (.625 inch) steel hemisphere. In spite of the order of magnitude difference in velocity ranges and impactor weights, similar relationships between impact energy, damage size, and residual strength were found. The dependence of the skin compressive strength on damage size agree well with analytical open hole models for composite laminates and may enable the prediction of ultimate performance for the damaged sandwich, based on visual inspection.

Descriptors: Beams and Girders; Mathematical Models; Photography; Strength of Materials;

Stresses--Analysis; *Structural Panels

Identifiers: Composite Laminates; Impact Energy; Impact Response; Sandwich Panels; Skin

Compressive Strength; Syntactic Foam Core

Classification Codes:

408 (Structural Design)

421 (Strength of Building Materials; Mechanical Properties)

742 (Cameras & Photography)

921 (Applied Mathematics)

931 (Applied Physics Generally)

^ 4/5/8 (Item 7 from file: 8) [Links](#)

Ei Compendex(R)

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0012471000 E.I. COMPENDEX No: 1991010069883

Advanced instrumented sphere (IS) for impact measurements

Zapp, H.R.; Ehlert, S.H.; Brown, G.K.; Armstrong, P.R.; Sober, S.S.

Corresp. Author/Affil: Zapp, H.R.: Michigan State Univ, East Lansing, United States

Transactions of the American Society of Agricultural Engineers (Trans ASAE) 1990 33/3 (955-960)

Publication Date: 19901201

CODEN: TAAEA ISSN: 0001-2351

Document Type: Article; Journal Record Type: Abstract

Treatment: A; (Applications); X; (Experimental)

Language: English Summary Language: English

Number of References: 14

The transportation and handling of agricultural products can result in various degrees of damage due to impacts. An 89-mm diameter self-contained, instrumented sphere (IS) was developed to record impacts it experiences while handled with like-sized commodities (apples, pears, peaches, oranges). This unit is approximately 1/4 the diameter of an earlier reported system, and has 32K of memory, EEPROM, smaller batteries, and simplified conditioning circuitry. The populated circuit board is foam insulated and then cast in beeswax for structural hardness. Analysis of recorded accelerations above a preprogrammed threshold allows estimates of fruit bruising that results from various impacts. Extensive laboratory drop tests were done using fruit and the IS to evaluate the reliability of predicted damage based on various impact characteristics (peak acceleration, velocity change).

Descriptors: Electronic Equipment; Materials Testing Apparatus; Materials Testing--Impact; Spheres; *Agricultural Products

Identifiers: Impact Measurements; Instrumental Spheres

Classification Codes:

421 (Strength of Building Materials; Mechanical Properties)

422 (Strength of Building Materials; Test Equipment & Methods)

722 (Computer Hardware)

821 (Agricultural Equipment & Methods)

942 (Electric & Electronic Measuring Instruments)

943 (Mechanical & Miscellaneous Measuring Instruments)

4/5/9 (Item 8 from file: 8) [Links](#)

Ei Compendex(R)

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0010602610 E.I. COMPENDEX No: 1978040003091

CONSTITUTIVE EQUATION FOR CREEP FRACTURE UNDER CONSTANT, VARIABLE OR CYCLIC POSITIVE STRESS.

Snedden, J.D.

Corresp. Author/Affil: Snedden, J.D.

Conference Location: San Francisco, CA, USA Conference Date: 19770815-19770819

Inelastic Anal of Metal Struct (Trans of the Int Conf on Struct Mech in React Technol, 4th) , L
8/10 V L/- (12)

Publication Date: 19780101

Publisher: Comm of the Eur Communities

Document Type: Journal Record Type: Abstract

Language: Unspecified Summary Language: English

Number of References: 8

This paper deals with the development and application of a constitutive equation for creep fracture of RR58 aluminum alloy at 180 degree C under variable stress. Stress changes were arranged to take place approximately at two stages during primary creep, one stage corresponding to minimum creep rate and one stage in established tertiary creep. The creep fracture curve for virgin material was also available, thus giving five levels of damage. A datum stress level was selected and specimens were damaged to each of the above stages of creep, whereupon the stress was changed and the residual life, at a series of new stress levels, determined. Correlation and regression analyses of the results from 32 tests gave an exponential equation, the constants being dependent upon the degree of damage. This equation predicts the residual life and the total time to fracture is obtained by summation of the stage times and the residual life. The concept of effective damage is introduced to apply the equation to multi-change variable and cyclic tests. Acceleration of initial damage is shown to be highest during early primary creep which is when the percentage anelasticity is highest.

Descriptors: ALUMINUM AND ALLOYS - Fracture; FAILURE ANALYSIS - Mathematical Models; *METALS AND ALLOYS

Identifiers: CONSTITUTIVE EQUATIONS

Classification Codes:

421 (Strength of Building Materials; Mechanical Properties)

531 (Metallurgy & Metallography)

541 (Aluminum & Alloys)

931 (Applied Physics Generally)

4/5/10 (Item 1 from file: 36) [Links](#)

MetalBase

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0002808572 IP Accession No.: A90010036

External current response in the corrosion fatigue test

Author: Nunomura, S.; Higo, Y.; Ono, M.; Kayano, Y.

Editor: Kettunen, P.O. (editor); Lepisto, T.K. (editor); Lehtonen, M.E. (editor)

Tokyo Inst. of Technol., Res. Lab. of Precision Machinery & Electron., Yokohama, Japan

Conference: Strength of Metals and Alloys (ICSMA 8) Proceedings of the 8th International Conference , Tampere, Finland , 22-26 Aug. 1988

Publ: Pergamon, Oxford, UK , 1988

3 vol. xxiv+1503, 749-54 vol.2 ,
1988

ISBN: 0 08 034804 1

Country of Publication: UK

Refs.: 8

Document Type: Conference Paper (PA)

File Segment: INSPEC

Abstract

Language: English

Notes: Conference Sponsor: Outokumpu OylRauma-Repola Oy let al

Abstract: During a corrosion fatigue test under constant potential the external current, the polarization current, is followed by cyclic tension-compression loading. This current change means the acceleration of corrosion due to the loading. From the polarization current, the component of the acceleration which is synchronized with the cyclic loading using Fourier transformation is separated. This component of the current is named stress synchronized polarization current (SSPC) and examined with the fatigue lives of the four point bending test specimens. Using 316L and duplex stainless steel specimens, the corrosion fatigue tests were carried out in 0.9% NaCl solution under the constant potential of free corrosion and under a few anodic potentials. The SSPC corresponded to the fatigue life, namely, under the potential where SSPC was smaller, corrosion fatigue damage was also smaller and then fatigue life was longer. The result suggests that the SSPC, which can be measured at the early stage of the fatigue test, is useful to estimate the corrosion fatigue damage quantitatively.

Descriptors: austenitic stainless steel; corrosion fatigue; corrosion testing; fatigue testing; stainless steel

Identifiers: external current response; austenitic stainless steel; corrosion fatigue test; cyclic tension-compression loading; Fourier transformation; stress synchronized polarization current; fatigue lives; four point bending test specimens; duplex stainless steel specimens; anodic potentials; corrosion fatigue damage; NaCl solution

INSP

2004 Institute of Electrical Engineers

4/5/11 (Item 1 from file: 95) [Links](#)

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TEME-Technology & Management

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02346276 20080507355

Creep-induced evolution of ultrasonic attenuation in a martensite stainless steel

(Kriechinduzierte Veraenderung der Ultraschallschwaechung in martensitischem nichtrostendem Stahl)

Ohtani, T

Shonan Institute of Technology, Fujisawa, JP

34th Review of Progress in Quantitative Nondestructive Evaluation Vol. 27, Vol.B, Golden, Colorado, US, Jul 22-27, 2007 AIP Conference Proceedings, v975, n3, pp1236-1243 , 2008

Document type: CD-ROM; 06 Conference paper Language: English

Record type: Abstract
ISBN: 978-0-7354-0494-6
ISSN: 0094-243X

Abstract:

Electromagnetic acoustic resonance (EMAR) is a contactless resonance method using an electromagnetic acoustic transducer (EMAT). In this study, EMAR was applied to detect the creep damage process in a martensite stainless steel (JIS-SUS403). Attenuation showed a peak at around 20 % and a minimum value at 50 % of the creep life, which is interpreted as resulting from micro structural changes, especially, dislocation mobility and restructuring. This result is supported by TEM observations. The relationship between the changes in ultrasonic attenuation and velocity and the micro structural change can be explained with the Granato-Lilcke string model. This technique has the potential to assess the damage advance and to predict the creep life of metals.

Descriptors: NDT--NONDESTRUCTIVE TESTING; ACOUSTIC MEASUREMENT METHOD; ACOUSTICAL WAVE ATTENUATION MEASUREMENT; CREEP--MATERIALS; MARTENSITIC STEEL; CORROSION RESISTANT STEEL; ELECTRODYNAMICAL CONVERTERS; TRANSMISSION ELECTRON MICROSCOPES

Identifiers: Schallschwächung; Kriechen; martensitischer Stahl; elektrodynamischer Wandler

14/5/1 (Item 1 from file: 6) [Links](#)

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2298292 NTIS Accession Number: N20040086502/XAB

Investigating the Use of Ultrasonic Guided Waves for Aging Wire Insulation Assessment

Anastasi, R. F. ; Madaras, E. I.

Army Research Lab.

Corporate Source Codes: 888888888

Sponsor: NASA Langley Research Center.

2002 one CD-ROM contains 7 page document

Language: English

Journal Announcement: USGRDR0501; STAR4308

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Country of Publication: United States

Aging wiring has become a critical issue to DoD, NASA, FAA, and Industry. The problem is that insulation on environmentally aged wire becomes brittle and cracks. This exposes the underlying conductive wire to the potential for short circuits and fire. The difficulty is that techniques to monitor aging wire problems focus on applying electrical sensing techniques that are not very sensitive to the wire insulation. Thus, the development of methods to quantify and monitor aging wire insulation is highly warranted. Measurement of wire insulation stiffness by ultrasonic guided waves is being

examined. Initial laboratory tests were performed on a simple model consisting of a solid cylinder and then a solid cylinder with a polymer coating. Experimental measurements showed that the lowest order axisymmetric mode may be sensitive to stiffness changes in the wire insulation. To test this theory, mil-spec wire samples MIL-W-81381, MIL-W-22759/34, and MIL-W-22759/87 (typically found in aircraft) were heat-damaged in an oven, in a range of heating conditions. The samples were 12, 16, and 20 gauge and the heat-damage introduced material changes in the wire-insulation that made the originally flexible insulation brittle and darker in color. Axisymmetric mode phase velocity increased for the samples that were exposed to heat for longer duration. For example, the phase velocity in the 20-gauge MIL-W-22759/34 wire changed from a baseline value of 2790m/s to 3280m/s and 3530m/s for one-hour exposures to 3490C and 3990C, respectively. Although the heat-damage conditions are not the same as environmental aging, we believe that with further development and refinements, the ultrasonic guided waves can be used to inspect wire-insulation for detrimental environmental aging conditions.

Descriptors: *Aging(Materials); *Wire; *Insulation; *Brittleness; *Cracks; *Ultrasonic radiation; Damage; Detection; Exposure; Fires; Heating; Measuring instruments; Short circuits; Stiffness
Identifiers: NTISNASA

Section Headings: 49GE (Electrotechnology--General)

14/5/2 (Item 2 from file: 6) [Links](#)

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2260024 NTIS Accession Number: N20030014498/XAB

Evaluating Thermally Damaged Polyimide Insulated Wiring (MIL-W-81381) with Ultrasound

Madaras, E. I. ; Anastasi, R. F.

National Aeronautics and Space Administration, Hampton, VA. Langley Research Center.

Corporate Source Codes: 019041001; ND210491

2002 CD-ROM

Language: English

Journal Announcement: USGRDR0313; STAR4202

Presented at 6th Joint FAA/DOD/NASA Aging Aircraft Conference San Francisco, CA 16-19 Sep. 2002. Federal Aviation Administration.

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NTIS Prices: AV\$25.00

Country of Publication: United States

A series of experiments to investigate the use of ultrasound for measuring wire insulation have been conducted. Initial laboratory tests were performed on MIL-W-81381/7, /12, and /21 aviation wire, a wire that has polyimide (Kapton Registered Trademark) layers for insulation. Samples of this wiring were exposed to 370C temperatures for different periods of time to induce a range of thermal damage. For each exposure, 12 samples of each gauge (12, 16, and 20 gauges) were processed. The velocity of the lowest order axisymmetric ultrasonic guided mode, a mode that is sensitive to the geometry and stiffness of the wire conductor and insulation, was measured. The phase velocity for the 20-gauge MIL-W-81381/7 wire had a baseline value of 3023 +/- 78 m/s. After exposure to the high temperatures, the wire's phase velocity rapidly increased, and reached an asymptotic value of

3598 +/- 20 m/s after 100 hours exposure. Similar behavior was measured for the 16 gauge MIL-W-81381/21 wire and 12 gauge MIL-W-81381/12 wire which had baseline values of 3225 +/- 22 m/s and 3403 +/- 33 m/s respectively, and reached asymptotic values of 3668 +/- 19 m/s, and 3679 +/- 42 m/s respectively. These measured velocity changes represent changes of 19, 14, and 8 percent respectively for the 20, 16, and 12 gauge wires. Finally, some results for a wire with an ethylene tetrafluoroethylene insulation are reported. Qualitatively similar behaviors are noted ultrasonically. Descriptors: *Ultrasonic flaw detection; *Nondestructive tests; *Temperature effects; *Phase velocity; *Electric wire; *Electrical insulation; *Wave propagation; Kapton(Trademark); Measuring instruments; Polyimides; Experiment design

Identifiers: NTISNASA

Section Headings: 51C (Aeronautics and Aerodynamics--Aircraft); 51E (Aeronautics and Aerodynamics--Avionics); 49F (Electrotechnology--Power and Signal Transmission Devices); 94J (Industrial and Mechanical Engineering--Nondestructive Testing)

14/5/3 (Item 3 from file: 6) [Links](#)

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1969333 NTIS Accession Number: N96-27282/8

Structural Damage Prediction and Analysis for Hypervelocity Impact: Properties of Largest Fragment Produced by Hypervelocity Impact of Aluminum Spheres with Thin Aluminum Sheets

(Final Report)

Piekutowski, A. J.

Dayton Univ. Research Inst., OH. Structural Integrity Div.

Corporate Source Codes: 109432001; DE473337

Sponsor: National Aeronautics and Space Administration, Washington, DC.

Report Number: NAS 1.26:200968; AIAA-92-1588; NASA-CR-200968

17 Oct 95 12p

Language: English

Journal Announcement: GRAI9621; STAR3410

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NTIS Prices: PC A03/MF A01

Country of Publication: United States

Contract Number: NAS8-38856; A71447

Results of a series of hypervelocity impact tests are presented. In these tests, 1.275-g, 9.53-mm-diameter, 2017-T4 aluminum spheres were fired at normal incidence at eight thicknesses of 6061-T6 aluminum sheet. Bumper thickness to projectile diameter (t/D) ratio ranged from 0.026 to 0.424.

Nominal impact velocity was 6.7 km/s. Results of five tests using 6.35, 9.53, and 12.70-mm-diameter aluminum spheres and other aluminum alloy bumpers are also given. The change in the velocity of small fragments spalling from the rear of the projectile was used to obtain a relationship showing a linear increase in the size of the central projectile fragment with decrease in the shock-induced stress in the projectile.

Descriptors: *Aluminum alloys; *Damage assessment; *Hypervelocity impact; *Impact tests; *Target thickness; Debris; Metal sheets; Projectile cratering; Spacecraft shielding; Spherical shells; Velocity measurement

Identifiers: NTISNASA

Section Headings: 71N (Materials Sciences--Nonferrous Metals and Alloys); 71L (Materials Sciences--Materials Degradation and Fouling); 84C (Space Technology--Manned Spacecraft)

14/5/4 (Item 4 from file: 6) [Links](#)

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1895848 NTIS Accession Number: N95-28431/1

Compressive Residual Strength of Graphite/Epoxy Laminates after Impact

Guy, T. A. ; Lagace, P. A.

Massachusetts Inst. of Tech., Cambridge.

Corporate Source Codes: 001450000; MJ700802

Sponsor: National Aeronautics and Space Administration, Washington, DC.

Sep 92 22p

Language: English

Journal Announcement: GRAI9520; STAR3309

In FAA, Ninth DOD/NASA/FAA Conference on Fibrous Composites in Structural Design, Volume 1 p 253-274

NTIS Prices: (Order as N95-28420, PC A23/MF A04)

Country of Publication: United States

The issue of damage tolerance after impact, in terms of the compressive residual strength, was experimentally examined in graphite/epoxy laminates using Hercules AS4/3501-6 in a (+ or - 45/0)(sub 2S) configuration. Three different impactor masses were used at various velocities and the resultant damage measured via a number of nondestructive and destructive techniques. Specimens were then tested to failure under uniaxial compression. The results clearly show that a minimum compressive residual strength exists which is below the open hole strength for a hole of the same diameter as the impactor. Increases in velocity beyond the point of minimum strength cause a difference in the damage produced and cause a resultant increase in the compressive residual strength which asymptotes to the open hole strength value. Furthermore, the results show that this minimum compressive residual strength value is independent of the impactor mass used and is only dependent upon the damage present in the impacted specimen which is the same for the three impactor mass cases. A full 3-D representation of the damage is obtained through the various techniques. Only this 3-D representation can properly characterize the damage state that causes the resultant residual strength. Assessment of the state-of-the-art in predictive analysis capabilities shows a need to further develop techniques based on the 3-D damage state that exists. In addition, the need for damage 'metrics' is clearly indicated.

Descriptors: *Compressive strength; *Graphite-epoxy composites; *Impact strength; *Impact tolerances; *Laminates; *Residual strength; Failure analysis; Holes (Mechanics); Impact tests

Identifiers: NTISNASA

Section Headings: 71F (Materials Sciences--Composite Materials)

14/5/5 (Item 5 from file: 6) [Links](#)

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1496734 NTIS Accession Number: DE90702472

Choonpaho ni yoru creep sonsho kenshutsu no rironteki kento. (Theoretical study on creep damage detection by ultra-sonic wave measurement)

Matsubara, M. ; Nitta, A.

Central Research Inst. of Electric Power Industry, Tokyo (Japan). Energy and Environment Lab.

Corporate Source Codes: 005875002; 9699261

Report Number: CRIE-T-88014

Dec 88 33p

Language: Japanese

Journal Announcement: GRAI9011; ERA9018

In Japanese.

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NTIS Prices: PC A03/MF A01

Country of Publication: Japan

This report described the theoretical study on an application of ultrasonic wave measurement to detect the creep damage of a steam turbine rotor material. It was clarified from reference survey that there were many studies on application of an ultrasonic method to detect creep damage by considering the effectiveness of this method, but researching example for the rotor material by other research organizations could not be found. The author developed a theoretical evaluation method of change in ultrasonic wave attenuation and velocity with progress in creep damage by using the creep cavity growth model and so on. This method enabled to grasp the approximate changes of ultrasonic variables accompanied by the progress of creep damage. Further, it was theoretically supported that the change in attenuation was more appropriate parameter than the change in velocity to detect the creep damage for the rotor material. 14 refs., 28 figs., 4 tabs.

Descriptors: *Steam Turbines; Attenuation; Creep; Damage; Information Retrieval; Lifetime; Nondestructive Testing; Rotors; Ultrasonic Testing; Ultrasonic Waves; Velocity

Identifiers: *Foreign technology; EDB/200104; EDB/360103; NTISDEE

Section Headings: 94J (Industrial and Mechanical Engineering--Nondestructive Testing)

^ 14/5/6 (Item 6 from file: 6) [Links](#)

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0889765 NTIS Accession Number: PB81-174732/XAB

Supplemental National Crash Severity Study Accident Reconstruction
(Final rept. Jan-Sep 80)

Segal, D. J. ; McGrath, M. T. ; Balasubramanian, N.

MGA Research Corp., Buffalo, NY.

Corporate Source Codes: 070055000

Sponsor: National Highway Traffic Safety Administration, Washington, DC.

Report Number: G-19-V-1; DOT-HS-805 742

Sep 80 174p

Language: English

Journal Announcement: GRAI8115

Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.

NTIS Prices: PC A08/MF A01

Country of Publication: United States

Contract Number: DTNH-22-80-C-07065

The study collected accident data that would allow determination of the relationships between occupant injury and accident severity. The measure of severity most commonly used to characterize an accident is the velocity change experienced by the passenger compartment during the collision. In some 52% of the accidents contained in the pre-April 1978 NCSS data file, these velocity changes have been established with the CRASH computer program. However, it was felt that a substantial number of the remaining cases were reconstructable with other methods. As a result, procedures were developed to estimate velocity changes in two car accidents in which the damage to 484 additional accidents from the pre-April 1978 NCSS file have been reconstructed to the point of having velocity change estimates for the vehicles involved.

Descriptors: *Motor vehicle accidents; Injuries; Statistical analysis; Collisions

Identifiers: *Accident reconstruction; *Accident severity; Speed; NTISDOTHTS

Section Headings: 85D (Transportation--Transportation Safety); 85H (Transportation--Road Transportation)

14/5/7 (Item 1 from file: 8) [Links](#)

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0015717698 E.I. COMPENDEX No: 2003477744238

Practical Analyses in Proving Damages

Harris, Jack W.; Ainsworth, Andrew

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Author email: AndrewNWG@aol.com

Conference Title: 47th Annual Meeting of AACE International

Conference Location: Orlando, FL United States Conference Date: 20030622-20030625

E.I. Conference No.: 61554

AACE International. Transactions of the Annual Meeting (AACE Int Trans Annu Meet) (United States) 2003 (CDR041-CDR0410)

Publication Date: 20031201

Publisher: Association for the Advancement of Cost Engineering

CODEN: AACTA ISSN: 0065-7158

Document Type: Conference Paper; Conference Proceeding Record Type: Abstract

Treatment: G; (General review)

Language: English Summary Language: English

The practical analysis and the vital causal link from the entitlement issues and events to the proof for damage and applicable cost support are discussed. The documentation obtained through the scheduling and project management efforts will provide the important link of the disruption and delay events to the damages incurred. Proof of damages is necessary for direct damages claims for disruption, delay, acceleration and change in scope.

Descriptors: Costs; Project management; *Scheduling

Identifiers: Cost support
Classification Codes:
912.2 (Management)
911 (Cost & Value Engineering; Industrial Economics)

14/5/8 (Item 2 from file: 8) [Links](#)

Ei Compendex(R)

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0015257927 E.I. COMPENDEX No: 2002457187531

Dependence of the longitudinal velocity of sound in structural ceramic materials on pressure and degree of damage

Skripnyak, V.A.; Skrupnyak, E.G.; Zhukova, T.V.

Corresp. Author/Affil: Skripnyak, V.A.: Tomskij GU, Tomsk, 634050, Russian Federation

Fizika Goreniya i Vzryva (Fiz Gorennya Vzryva) (Russian Federation) 2001 37/5 (121-127)

Publication Date: 20011201

Publisher: Izdatel'stvo SO RAN

CODEN: FGVZA ISSN: 0430-6228

Document Type: Article; Journal Record Type: Abstract

Treatment: T; (Theoretical)

Language: Russian Summary Language: Russian; English

Number of References: 23

The influence is numerically studied of porosity and concentration of plane microcracks on shock wave velocity in polycrystal ceramic materials on the basis of SiC, Al SUB 2O SUB 3, B SUB 4C and ZrO SUB 2. Mechanical ceramics behavior is described with using the model of damaged medium. It is shown that in porosity to 20%, satisfactory prediction of a longitudinal wave velocity change in ceramics is provided by application of the exponential and linear dependences describing the relationship of effective modules of medium material elasticity with relative damages volume.

Descriptors: Acoustic wave velocity; Ceramic materials; Cracks; Numerical analysis; Porosity; Pressure; *Elastic waves

Identifiers: Plane microcracks concentration

Classification Codes:

751.1 (Acoustic Waves)

812.1 (Ceramics)

921.6 (Numerical Methods)

931.1 (Mechanics)

421 (Strength of Building Materials; Mechanical Properties)

14/5/9 (Item 3 from file: 8) [Links](#)

Ei Compendex(R)

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0014898015 E.I. COMPENDEX No: 2001416683119

A case study of applicability of seismic bearing capacity method to open piled pier with vertical steel piles

Suzuki, T.; Ueda, S.; Ikeuchi, T.; Ishida, M.

Corresp. Author/Affil: Suzuki, T.: Japan Port Consultant, Tokyo, Japan

Conference Title: 11th (2001) International Offshore and Polar Engineering Conference

Conference Location: Stavanger Norway Conference Date: 20010617-20010622

Sponsor: NORSKE CONOCO

E.I. Conference No.: 58497

Proceedings of the International Offshore and Polar Engineering Conference (Proc Int Offshore Polar Eng Conf) (United States) 2001 4/- (433-440)

Publication Date: 20010918

Publisher: International Society of Offshore and Polar Engineers

CODEN: POPEE

Document Type: Conference Paper; Conference Proceeding Record Type: Abstract

Treatment: T; (Theoretical)

Language: English Summary Language: English

Number of References: 4

This paper treats with a case study exploring the possibility of applying the seismic design practice based on the seismic bearing capacity method adopted in the Technical Standards for Port and Harbor Facilities (Ministry of Transport, 1999) through comparison of the results of nonlinear static analysis based on a pushover analysis (hereinafter referred to as static analysis) and the nonlinear dynamic analysis (hereinafter referred to as dynamic analysis) in relation to the damage done to an open piled pier in Kobe Port during the Great Hanshin Earthquake. From the collation of the damage occurrences determined in the static analysis with actual cases of damage, the horizontal force acting on the damaged pier structure was estimated at approximately 28000 kN and the amount of displacement at about 6 cm. Comparison of the static and dynamic analysis results showed a good agreement between them in point of displacement. It was confirmed that the input energy due to linear elastic response of a single-degree of freedom was nearly equal in amount to nonlinear elastoplastic energy. It was also found that the amount of elastoplastic response of the pier superstructure could be determined accurately from response value of a single-degree of freedom at point $1/\beta$ below the seabed of the piles. A problem encountered in estimating the amount of elastic response under the equal energy principle was how to determine the radiation damping constant. In this study, attention was paid to the fact that a damping constant which minimized the difference Δ between elastoplastic response displacement $\Delta_{SUB y}$ and elastic response displacement $\Delta_{SUB E}$ was in good agreement with the acceleration (inertia force) and its displacement obtained from dynamic analysis results.

Descriptors: Bearing capacity; Buckling; Damping; Degrees of freedom (mechanics); Dynamic mechanical analysis; Dynamic response; Elastoplasticity ; Piles; Structural analysis; Tsunamis;

*Piers

Identifiers: Seismic bearing capacity method

Classification Codes:

407.1 (Maritime Structures)

408.1 (Structural Design, General)

408.2 (Structural Members & Shapes)

471.4 (Seawater, Tides & Waves)

931.1 (Mechanics)

421 (Strength of Building Materials; Mechanical Properties)

14/5/10 (Item 4 from file: 8) [Links](#)

Ei Compendex(R)

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0014607990 E.I. COMPENDEX No: 2000355246830

Selective photocoagulation of cutaneous blood vessels: Evaluation of vessel damage by color Doppler optical coherence tomography

Vargas, Gracie; Ducros, Mathieu; Dozier, Susan; Barton, Jennifer Kehlet; Welch, Ashley J.

Corresp. Author/Affil: Vargas, Gracie: Univ of Texas at Austin, Austin, United States

Conference Title: Lasers in Surgery: Advanced Characterization, Therapeutics, and Systems X

Conference Location: San Jose, CA, USA Conference Date: 20000122-20000125

Sponsor: SPIE; IBOS

E.I. Conference No.: 57002

Proceedings of SPIE - The International Society for Optical Engineering (Proc SPIE Int Soc Opt Eng) 2000 3907/- (136-142)

Publication Date: 20001203

Publisher: Society of Photo-Optical Instrumentation Engineers

CODEN: PSISD ISSN: 0277-786X

Document Type: Conference Paper; Conference Proceeding Record Type: Abstract

Treatment: X; (Experimental)

Language: English Summary Language: English

Number of References: 10

This study investigates the threshold radiant exposures required to irreversibly damage cutaneous blood vessels using a pulsed dye laser (PDL) operating at 585 nm. Evaluation of blood vessel damage and blood flow stoppage was achieved using Doppler imaging in a color Doppler optical coherence tomographic (CDOCT) system. Hamster dorsal skin flap window vessels were irradiated with radiant exposures ranging from 2.5-8 J/cm². A 5 mm spot size and 360 μs pulse duration were used. Irradiation sites were imaged with CDOCT prior to, immediately after, and a minimum of 24 hours after delivery of laser energy. Magnitude and color Doppler images provided information such as approximate vessel size, depth, and changes in blood flow velocity. Vessel stenosis, temporary occlusion, permanent occlusion, hemorrhaging, and changes in flow velocity were frequent results of laser irradiation visualized with CDOCT and video imaging. Probit analysis was used to estimate the 50% probability that a blood vessel of given size and type will be destroyed by a given radiant exposure. In most instances, arterioles required higher radiant exposures to be irreversibly damaged than venules of the same size. However, arteriole/venule pairs required approximately the same radiant exposures for visible damage to occur. Vessels of larger diameter required higher radiant exposures to coagulate than vessels of smaller diameter.

Descriptors: Blood vessels; Coagulation; Color image processing; Doppler effect; Dye lasers; Hemodynamics; Pulsed laser applications; Skin; Tomography; *Medical imaging

Identifiers: Optical coherence tomography; Pulsed dye lasers; Selective photocoagulation; Vessel coagulation

Classification Codes:

461.1 (Biomedical Engineering)

461.2 (Biological Materials)

741.1 (Light & Optics)

744.9 (Laser Applications)

802.3 (Chemical Operations)

744 (Lasers)

14/5/11 (Item 5 from file: 8) [Links](#)

Ei Compendex(R)

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0014483030 E.I. COMPENDEX No: 2000044940713

Super-dense real-time disaster mitigation system

Shimizu, Yoshihisa; Koganemaru, Kenichi; Nakayama, Wataru; Yamazaki, Fumio

Corresp. Author/Affil: Shimizu, Yoshihisa: Tokyo Gas Co, Ltd, Tokyo, Japan

Conference Title: Proceedings of the 1999 5th U.S. Conference on Lifeline Earthquake Engineering: Optimizing Post-Earthquake Lifeline System Reliability

Conference Location: Seattle, WA, USA Conference Date: 19990812-19990814

E.I. Conference No.: 55705

Technical Council on Lifeline Earthquake Engineering Monograph (Tech Council Lifeline Earthquake Eng Monogr) 1999 -/16 (822-831)

Publication Date: 19991201

Publisher: ASCE

CODEN: TLEMF

Document Type: Article; Journal Record Type: Abstract

Treatment: G; (General review)

Language: English Summary Language: English

Number of References: 3

In order to achieve a more sophisticated real-time system of disaster mitigation, Tokyo Gas Co., Ltd., commenced preparation of what will be the world's most extensive ultra-high-density real-time seismic motion monitoring and disaster mitigation system in January 1998. Known as 'SUPREME,' the system employs the New SI (spectrum intensity) sensor and a district regulator remote surveillance system installed at about 3,600 locations in its supply area, which measures about 3,100 square kilometers. The New SI sensors utilize ultra-small acceleration pickups made with micromachining technology as well as central processing units (CPUs) and random access memory (RAM) units, and constitute a new kind of seismometer that is both high-performance and low-cost. They are capable of measuring SI and ground acceleration, recording six earthquake wave-form acceleration trends on three (XYZ) axes, detecting liquefaction based on knowledge of the changes in acceleration waves, and control of regulators by means of settings for SI or acceleration. Tokyo Gas intends to harness the system for high-precision estimates of damage and detection of liquefaction in real time, and for investigation of seismic shaking amplification at various points based on wave-forms for small and medium earthquakes.

Descriptors: Acceleration measurement; Disaster prevention; Gas industry; Random access storage; Real time systems; Seismic waves; Seismology; Soil liquefaction; *Seismographs

Identifiers: Acceleration pickups; Central processing units; Ground acceleration; Regulator remote surveillance system; Spectrum intensity; Super dense real time disaster mitigation system

Classification Codes:

484.1 (Earthquake Measurements & Analysis)

722.1 (Data Storage, Equipment & Techniques)

722.4 (Digital Computers & Systems)

914.1 (Accidents & Accident Prevention)

943.3 (Special Purpose Instruments)

522 (Gas Fuels)

14/5/12 (Item 6 from file: 8) [Links](#)

Ei Compendex(R)

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0014055377 E.I. COMPENDEX No: 1998164091339

Predicting the outcome of construction litigation using neural networks

Arditi, David; Oksay, Fatih E.; Tokdemir, Onur B.

Corresp. Author/Affil: Arditi, David: Illinois Inst of Technology, Chicago, United States

Computer-Aided Civil and Infrastructure Engineering (Comput Aid Civ Infrastruct Eng) 1998 13/2 (75-81)

Publication Date: 19980101

Publisher: Blackwell Publ Inc

CODEN: CCIEF ISSN: 1093-9687

Document Type: Article; Journal Record Type: Abstract

Treatment: A; (Applications); G; (General review)

Language: English Summary Language: English

Number of References: 11

In this study, neural networks were used to predict the outcome of construction litigation. Disagreements between the owner and the contractor can arise from such considerations as interpretation of the contract, changes made by the owner, differing site conditions, acceleration and suspension of work, and so forth. When there are disagreements between the contractor and the owner, the result is the inefficient use of resources and higher costs for both the owner and the contractor, as well as damage to the reputation of both sides. Neural networks may help to predict the outcome of construction claims that are normally affected by a large number of complex and interrelated factors. Data composed of characteristics of cases and circuit and appellate court decisions were extracted from cases filed in Illinois appellate courts in the last 12 years. A network was trained using these data, and a rate of prediction of 67% was obtained. If the parties to a dispute know with some certainty how the case would be resolved if it were taken to court, it is believed that the number of disputes could be reduced greatly.

Descriptors: Contracts; Laws and legislation; Neural networks; *Construction industry

Identifiers: Construction litigation

Classification Codes:

723.4 (Artificial Intelligence)

902.3 (Legal Aspects)

405 (Construction Equipment & Methods; Surveying)

^ 14/5/13 (Item 7 from file: 8) [Links](#)

Ei Compendex(R)

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0013867944 E.I. COMPENDEX No: 1997323692775

Developing a crush profile estimate by balancing impact forces

Issue Title: Accident Reconstruction: Technology and Animation VII

Grimes, Wesley D.; Heusser, Ronald; Hunter, John; Neptune, James A.

Corresp. Author/Affil: Grimes, Wesley D.: Collision Engineering Associates, Inc

Conference Title: Proceedings of the 1997 International Congress and Exposition

Conference Location: Detroit, MI, USA Conference Date: 19970224-19970227

E.I. Conference No.: 46154

SAE Special Publications (SAE Spec Publ) 1997 , 970942 1237/- (1-20)

Publication Date: 19970101

Publisher: SAE

CODEN: SAESA ISSN: 1054-6693

Document Type: Conference Paper; Conference Proceeding Record Type: Abstract

Treatment: T; (Theoretical)

Language: English Summary Language: English

Number of References: 3

One of the methods used for speed change analysis involves estimating the crush profile on the vehicle whose damage pattern is unknown, and then to 'balance' the contact forces between the two vehicles. Using the EDCRASH program, the equivalent uniform profile is determined and the speed change for each vehicle is calculated. This method requires a detailed damage profile on at least one of the vehicles, accurate stiffness data for both vehicles, and a good understanding of the method and underlying assumptions. The method is demonstrated using two example cases: (a) collision between a 1985 Honda Accord 4-door sedan and a 1990 Toyota Corolla 4-door sedan; and (b) collision between a 1994 Chevrolet Camaro Z28 and a 1992 Nissan Sentra 2-door.

Descriptors: Algorithms; Approximation theory; Automobiles; Calculations; Computer software; Inspection; Mathematical models; Sensitivity analysis; Speed; Stiffness; *Accidents

Identifiers: Crush profile; Impact forces; Momentum equations; Software Package EDCRASH; Speed change

Classification Codes:

913.3.1 (Inspection)

662.1 (Automobiles)

723.1 (Computer Programming)

914.1 (Accidents & Accident Prevention)

921.6 (Numerical Methods)

14/5/14 (Item 8 from file: 8) [Links](#)

Ei Compendex(R)

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0013836216 E.I. COMPENDEX No: 1997243623849

Characterization of impact damage resistance of CF/PEEK and CF/toughened epoxy laminates under low and high velocity impact tests

Morita, H.; Adachi, T.; Tateishi, Y.; Matsumoto, H.

Corresp. Author/Affil: Morita, H.: Ishikawajima-Harima Heavy Industries, Co, Ltd, Yokohama, Japan

Journal of Reinforced Plastics and Composites (J Reinf Plast Compos) 1997 16/2 (131-143)

Publication Date: 19970101

Publisher: Technomic Publ Co Inc

CODEN: JRPCD ISSN: 0731-6844

Document Type: Article; Journal Record Type: Abstract

Treatment: X; (Experimental)

Language: English Summary Language: English

Number of References: 9

In order to use composite materials in aeronautical turbo engines, their resistance to impact damage must be understood. In this work the subperforation flat-wise impact resistance of three kinds of high resistance material systems were evaluated under low and high velocity impact tests. Tested systems were AS4/PEEK (APC-2/AS4, ICI-Fiberite), AS4/PEEK + IL, which consists of APC-2 prepreg and PEEK film inserted between layers as an interleave, and toughened epoxy system T800/#3900 (Toray). To investigate the effects of stacking sequence on resistance, three lay-ups -(0/ + 30/0/ - 30)s, (0/ +60/0/ -60)s, and (0/ +45/90/ -45)s-were tested. A drop weight system was used for the low

velocity tests, where the velocity ranged from 1.5 to 3.1 m/s. An air gun system was used for the high velocity tests, where the velocity range was between 50 and 100 m/s. Both velocity impact tests used the same specimens geometries, support structures, impactor head geometries, and incident energy range. The projected damage area was measured with an ultrasonic C-Scan. The relation between damage area (DA) and impact energy (IE) was linear, and the ratio of the DA/IE quantified the impact resistance of each specimen. The value of DA/IE for the high velocity tests was larger than the value for low velocity tests. To estimate the lay-up effect, a stacking parameter beta, which indicates the difference of the inplane stiffness between the adjacent laminae, was proposed. A proportional relation between the DA/IE and the beta was obtained. The value of (DA/IE)/beta, which was independent of stacking sequence, indicated the impact resistance of the tested material systems for both velocity levels. The ratio of (DA/IE)/beta for the high velocity to the value for the low velocity changed with material systems.

Descriptors: Carbon fibers; Characterization; Epoxy resins; Impact resistance; Impact testing; Plastic films; Polyether ether ketones; Stacking faults; *Carbon fiber reinforced plastics

Identifiers: Air gun system; Carbon fiber thermoplastic system; Carbon fiber toughened epoxy system; Drop weight system; Impact damage resistance ; Interleave; Subperforation flat wise impact resistance

Classification Codes:

815.1.1 (Organic Polymers)

415.2 (Plastics Structural Materials)

422.2 (Test Methods)

817.1 (Plastics Products)

421 (Strength of Building Materials; Mechanical Properties)

804 (Chemical Products Generally)

14/5/15 (Item 9 from file: 8) [Links](#)

Ei Compendex(R)

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0013560890 E.I. COMPENDEX No: 1996163040971

Thermal expansion of two normal phases along a current carrying inhomogeneous superconducting wire

Amaioua, N.; Holguin, E.; Loude, J.-F.

Corresp. Author/Affil: Amaioua, N.: Universite de Lausanne, Lausanne, Switzerland

Journal of low temperature physics (J Low Temp Phys) 1996 102/1-2 (157-170)

Publication Date: 19960101

Publisher: Plenum Publ Corp

CODEN: JLTPA ISSN: 0022-2291

Document Type: Article; Journal Record Type: Abstract

Treatment: T; (Theoretical); X; (Experimental)

Language: English Summary Language: English

Number of References: 11

We present a theoretical model which describes the thermal expansion of one or two normal phases along a current-carrying type-I inhomogeneous superconducting wire. We derive explicit formulas for the longitudinal propagation velocity in the case of low regimes using a quasi-stationary approximation of the heat equation, as well as for the onset of thermal destruction of superconductivity. In the case of two normal phases propagating in opposite directions, the model predicts a yet unobserved thermal interaction at distances d of the order of the diameter of the wire.

Depending on the local resistivity value and the distance d , the propagation velocity may change considerably. The predictions of the model are in good agreement with the available experimental data.

Descriptors: Approximation theory; Mathematical models; Superconductivity; Thermal effects; Thermal expansion; Velocity; *Superconducting wire

Identifiers: Current carrying inhomogeneous superconductors; Heat equation; Longitudinal propagation velocity; Normal phases; Quasi-stationary approximation; Thermal interaction; Thermal superconductivity destruction

Classification Codes:

641.1 (Thermodynamics)

708.3 (Superconducting Materials)

921.6 (Numerical Methods)

931.1 (Mechanics)

14/5/16 (Item 10 from file: 8) [Links](#)

Ei Compendex(R)

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0013495838 E.I. COMPENDEX No: 1995512909295

Ultrasonic velocities in intergranular creep damaged copper and oblate ellipsoidal void model

Morishita, Tomohiro; Hirao, Masahiko; Fukuoka, Hidekazu

Corresp. Author/Affil: Morishita, Tomohiro

Nippon Kikai Gakkai Ronbunshu, A Hen/Transactions of the Japan Society of Mechanical Engineers, Part A (Nippon Kikai Gakkai Ronbunshu A Hen) 1995 61/588 (1771-1776)

Publication Date: 19950101

Publisher: JSME

CODEN: NKGAD ISSN: 0387-5008

Document Type: Article; Journal Record Type: Abstract

Treatment: T; (Theoretical); X; (Experimental)

Language: English Summary Language: English

Number of References: 13

The dependence of the ultrasonic velocities on the creep damage can be used for its nondestructive evaluation. This study discussed the validity of the oblate ellipsoidal void model to predict their relationship. In the experiment, the ultrasonic velocities and the density change in creep damaged coppers were measured. The prediction by the spherical void model gives good agreement with the experimental results in the initial stage of the damage process. As the damage progresses, this model is no longer valid because of the anisotropy in ultrasonic velocities. The oblate ellipsoidal void model is thus used to explain the anisotropy. However, this model shows an opposite tendency in some cases of velocity rate changes with decrease in density. The density decrease estimated from the ultrasonic velocities is about two times larger than the direct measurement. Metallographical observations show that the clustering of voids on the grain boundaries and their orientation distribution should be considered.

Descriptors: Anisotropy; Copper; Creep; Grain boundaries; Inverse problems; Mathematical models; Nondestructive examination; Ultrasonic velocity measurement; *Ultrasonic velocity

Identifiers: Creep damage; Density change; Oblate ellipsoidal void model

Classification Codes:

544.1 (Copper)

753.1 (Ultrasonic Waves)

921.6 (Numerical Methods)
931.2 (Physical Properties of Gases, Liquids & Solids)
941.2 (Acoustic Variables Measurements)
421 (Strength of Building Materials; Mechanical Properties)

14/5/17 (Item 11 from file: 8) [Links](#)
Ei Compendex(R)
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0013335092 E.I. COMPENDEX No: 1995122533749
Study on fracture behavior in SiC by projectile impact

Nakayama, Masato; Machida, Takashi; Teramae, Tetsuo; Hamada, Seiichi
Corresp. Author/Affil: Nakayama, Masato
Nippon Kikai Gakkai Ronbunshu, A Hen/Transactions of the Japan Society of Mechanical Engineers, Part A (Nippon Kikai Gakkai Ronbunshu A Hen) 1994 60/577 (2068-2073)
Publication Date: 19941201
Publisher: JSME
CODEN: NKGAD ISSN: 0387-5008
Document Type: Article; Journal Record Type: Abstract
Treatment: T; (Theoretical); X; (Experimental)
Language: Japanese Summary Language: English
Number of References: 16

The influence of target thickness and projectile size on the projectile impact damage generated on SiC targets is investigated. The projectile impact generates several types of damage such as a ring crack, a crater or a cone crack. In the case of thick targets, the residual strength of the targets does not depend on target thickness. This is due to that damage is generated only near the impacted surface. On the other hand, in the case of thin targets, the residual strength drops drastically. This is due to the generation of 'back surface cracks.' In addition, the projectile size affects the residual strength and the cone crack size. However, the minimum impact velocity at which ring cracks are generated does not change with projective size.

Descriptors: Ceramic materials; Crack propagation; Cracks; Impact testing; Silicon carbide; Strength of materials; Velocity measurement; *Fracture mechanics
Identifiers: Cone crack size; Crater; Impact strength; Projectile impact damage; Projectile size; Residual strength; Size effect; Target thickness; Thin targets

Classification Codes:
422.2 (Test Methods)
812.1 (Ceramics)
931.1 (Mechanics)
943.2 (Mechanical Variables Measurements)
421 (Strength of Building Materials; Mechanical Properties)

14/5/18 (Item 12 from file: 8) [Links](#)
Ei Compendex(R)
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0012933748 E.I. COMPENDEX No: 1993010625674
Impact damage of long plastic cylinders

Fatt, Michelle S.Hoo; Wierzbicki, Tomasz

Corresp. Author/Affil: Fatt, Michelle S.Hoo: Massachusetts Inst of Technology, Cambridge, United States

International Journal of Offshore and Polar Engineering (Int J Offshore Polar Eng) 1992 2/2 (147-156)

Publication Date: 19921201

CODEN: IOPEE ISSN: 1053-5381

Document Type: Article; Journal Record Type: Abstract

Treatment: T; (Theoretical); X; (Experimental)

Language: English Summary Language: English

Number of References: 14

The objective of the paper is to assess the local damage of long tubular members and pipes caused by the impact of a rigid mass. The formulation is general and covers a wide range of events: low velocity-large mass impacts, as encountered in collisions; medium velocity impacts caused by dropped objects; and projectile and missile impacts. By making assumptions on the cross-sectional deformed shape of the cylinder, the two-dimensional shell problem was reduced to a one-dimensional problem of a plastic string resting on a rigid-plastic foundation. It was shown that the deformation propagates away from the point of disturbance with a constant plastic wave speed and diminishing amplitude. Calculated were the instantaneous velocity and deflection profiles, the final deformed shape of the shell, and the maximum deflection attainable under impact. A parametric study was performed by changing the mass and velocity of the impacting object over several orders of magnitude. An approximation to the dynamic solution was also obtained by using the static solution of the shell under 'knife' loading and comparing the plastic work of the deformation process to the kinetic energy of the impacting mass. This approximation was compared to the dynamic solution and good agreement was shown for a range of masses and impact velocities encountered in offshore applications. Finally, use of the proposed methodology was illustrated by predicting the local damage caused by a drill-collar accidentally falling on one of the brace tubular members of an offshore platform.

Descriptors: Deflection (structures); Energy dissipation; Offshore structures; Production platforms; Shells (structures); Structural analysis; Tubes (components); Wave effects; *Cylinders (shapes)

Identifiers: Impact damage; Long plastic cylinders; Rigid mass impact; Tubular members

Classification Codes:

408.2 (Structural Members & Shapes)

631.1 (Fluid Flow, General)

674.2 (Marine Drilling Rigs & Platforms)

421 (Strength of Building Materials; Mechanical Properties)

512 (Petroleum & Related Deposits)

931 (Applied Physics Generally)

14/5/19 (Item 13 from file: 8) [Links](#)

Ei Compendex(R)

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0012887566 E.I. COMPENDEX No: 1992050480475

Impact damage of long plastic cylinders

Issue Title: Proc First Int Offshore Polar Eng Conf

Hoo Fatt, Michelle S.; Wierzbicki, Tomasz

Corresp. Author/Affil: Hoo Fatt, Michelle S.: Massachusetts Inst of Technology, Cambridge,

United States

Conference Title: Proceedings of the First International Offshore and Polar Engineering Conference

Conference Location: Edinburgh, Scotl Conference Date: 19910811-19910816

Sponsor: Int Soc of Offshore & Polar Engineers (ISOPE); Offshore Mechanics & Polar Engineering Council (OMPEC)

E.I. Conference No.: 16383

1991 (172-182)

Publication Date: 19911201

Publisher: Publ by Int Soc of Offshore and Polar Engineerns (ISOPE)

ISBN: 0962610496; 9780962610493

Document Type: Conference Paper; Conference Proceeding Record Type: Abstract

Treatment: A; (Applications); T; (Theoretical)

Language: English Summary Language: English

Number of References: 14

The objective of the paper is to assess the local damage of long tubular members and pipes caused by the impact of a rigid mass. The formulation is general and covers a wide range of events: low velocity-large mass impacts, as encountered in collisions; medium velocity impacts caused by dropped objects; and projectile and missile impacts. By making assumptions on the cross-sectional deformed shape of the cylinder, the two-dimensional shell problem was reduced to a one-dimensional problem of a plastic string resting on a rigid-plastic foundation. It was shown that the deformation propagates away from the point of disturbance with a constant plastic wave speed and diminishing amplitude. Calculated were the instantaneous velocity and deflection profiles, the final deformed shape of the shell, and the maximum deflection attainable under impact. A parametric study was performed by changing the mass and velocity of the impacting object over several orders of magnitude. An approximation to the dynamic solution was also obtained by using the static solution of the shell under 'knife' loading and comparing the plastic work of the deformation process to the kinetic energy of the impacting mass. This approximation was compared to the dynamic solution and good agreement was shown for a range of masses and impact velocities encountered in offshore applications. Finally, use of the proposed methodology was illustrated by predicting the local damage caused by a drill-collar accidentally falling on one of the brace tubular members of an offshore platform.

Descriptors: Offshore Structures - Tubular; Structural Analysis - Mathematical Models; Structural Design - Impact Resistance; *Domes and Shells

Identifiers: Drill Collar; Knife Loading; Local Damage; Low Velocity Large Mass Impacts; Plastic Cylinders; Rigid Plastic Foundation

Classification Codes:

408 (Structural Design)

421 (Strength of Building Materials; Mechanical Properties)

674 (Small Craft & Other Marine Craft)

921 (Applied Mathematics)

14/5/20 (Item 14 from file: 8) [Links](#)

Ei Compendex(R)

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0012687340 E.I. COMPENDEX No: 1992090272394

Mexico earthquake of September 19, 1985 - relationships between soil conditions and earthquake ground motions

Seed, H.B.; Romo, M.P.; Sun, J.I.; Jaime, A.; Lysmer, J.
Corresp. Author/Affil: Seed, H.B.: Univ of California, United States
Earthquake Spectra (Earthquake Spectra) 1988 4/4 (687-729)

Publication Date: 19881201

CODEN: EASPE ISSN: 8755-2930

Item Identifier (DOI): [10.1193/1.1585498](https://doi.org/10.1193/1.1585498)

Document Type: Article; Trade Journal Record Type: Abstract

Treatment: T; (Theoretical); X; (Experimental)

Language: English Summary Language: English

Number of References: 10

Comparisons are presented between the characteristics of ground motions at five sites underlain by clay at which ground motions were recorded in Mexico City in the earthquake of September 19, 1985. It is shown that the ground response in areas of Mexico City underlain by clay is extremely sensitive to small changes in the shear wave velocity of the clay and it is suggested that a probabilistic approach which allows for uncertainties in shear wave velocity measurements and in the characteristics of the motions on the hard formations is desirable to assess these effects. Based on the results of such an approach, it is concluded that simple ground response analyses can provide very useful data for engineering assessments of the effects of local soil conditions on the characteristics of ground motions likely to develop at sites underlain by soft clays, and that the use of these procedures also provides a useful basis for estimating the general nature of the ground motions in the extensive heavy damage zone of Mexico City in the 1985 earthquake.

Descriptors: Probability--Random Processes; Seismic Waves--Amplification; soils--Physical Properties; Vibrations--Analysis; *Earthquakes

Identifiers: Catastrophic Earthquakes; Dynamic Soil Response; Ground Motion Acceleration; Soil Compressibility; Strong Motion Acceleration Spectra

Classification Codes:

483 (Soil Mechanics & Foundations)

484 (Seismology)

922 (Statistical Methods)

931 (Applied Physics Generally)

14/5/21 (Item 15 from file: 8) [Links](#)

Ei Compendex(R)

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0012552136 E.I. COMPENDEX No: 1991070209787

Theoretical study on creep damage detection by ultrasonic wave measurement

Issue Title: Fracture and Strength '90

Matsubara, M.; Nitta, A.; Sakai, S.; Fujinawa, N.

Corresp. Author/Affil: Matsubara, M.: Central Research Inst of Electric, Power Industry, Tokyo, Japan

Editor(s): Lee, Kang Yong; Takahashi, Hideaki

Editor(s) Affil.: Yonsei Univ, Seoul, South Korea

Conference Title: Proceedings of the KSME/JSME Joint Conference

Conference Location: Seoul, South Korea Conference Date: 19900706-19900707

Sponsor: Korean Soc of Mechanical Engineers; JSME; Korea Science & Engineering Foundation; Korea Ministry of Education; Korean Federation of Science & Technology Soc

E.I. Conference No.: 14437

Mechanical and corrosion properties. Series A, Key engineering materials (Key Eng Mat) 1991
51-52/- (25-30)

Publication Date: 19910101

Publisher: Publ by Trans Tech Publ

CODEN: KEMAE ISSN: 0252-1059

Document Type: Conference Paper; Conference Proceeding Record Type: Abstract

Treatment: T; (Theoretical)

Language: English Summary Language: English

Number of References: 4

A theoretical study was made on creep damage detection by ultrasonic wave measurement. The evaluation method was developed to predict ultrasonic attenuation and velocity changes with increasing creep damage. The method was obtained from results combining the following theories and experiments: (1) ultrasonic attenuation of a void-containing medium, (2) elastic constants of a solid containing spherical holes, (3) damage rate approach, and (4) creep damage assessment by density change measurement. The material tested is a Cr-Mo-V forging steel obtained from a rotor in operation over 100,000 hours. The specimens are cut from the part exposed to about 400-450 (deg)C.

Descriptors: Failure Analysis; Nondestructive Examination - Ultrasonic Applications;
Turbomachinery - Rotors; Ultrasonic Waves; *Steel

Identifiers: Creep Damage Detection

Classification Codes:

421 (Strength of Building Materials; Mechanical Properties)

545 (Iron & Steel)

601 (Mechanical Design)

632 (Hydraulics, Pneumatics & Related Equipment)

753 (Ultrasonics & Applications)

14/5/22 (Item 16 from file: 8) [Links](#)

Ei Compendex(R)

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0012386507 E.I. COMPENDEX No: 1990060939135

Theoretical study of rapid hyperthermia by scanned, focused ultrasound

Davis, B.J.; Lele, P.P.

Corresp. Author/Affil: Davis, B.J.: Massachusetts Inst of Technology, United States

Conference Title: Porous Media, Mixture, and Multiphase Heat Transfer: Presented at the Winter Annual Meeting of the ASME

Conference Location: San Francisco, CA, USA Conference Date: 19891210-19891215

Sponsor: ASME, Heat Transfer Div, New York, NY, USA

E.I. Conference No.: 12998

American Society of Mechanical Engineers, Heat Transfer Division, (Publication) HTD (ASME
Heat Transfer Div Publ HTD) 1989 126/- (51-58)

Publication Date: 19891201

Publisher: Publ by ASME

CODEN: ASMHD ISSN: 0272-5673

Document Type: Conference Paper; Conference Proceeding Record Type: Abstract

Treatment: T; (Theoretical)

Language: English Summary Language: English

Number of References: 25

A predictive method is presented for the determination of temperature histories and equivalent thermal doses produced from a linearly-scanned, focused ultrasound beam. The method predicts that time-temperature histories synonymous with ultrasound-induced thermal damage may be produced in a significant tumor volume by a scanned beam which traverses a region only once. Simulations using readily achievable scanning parameters and the empirical model of Sapareto and Dewey (1984) yield high equivalent thermal doses which are generally much greater than those associated with recent clinical hyperthermia protocols. The sensitivity of temperature and thermal dose to changes in scanning velocity and beam intensity is examined. A method for determining spacing between adjacent beam tracks which is predicted to achieve near uniformity in thermal dose through an idealized treatment volume is described. Constraints associated with peak allowable intensity, minimum required acoustic gain and adequate range of thermal dose are discussed. Minimum treatment time is chosen as the parameter for aiding in the selection of frequency, aperture to focal length ratio, velocity and track spacing. The model predicts the feasibility of treating large perfused tumors to a high therapeutic dose.

Descriptors: Heat Transfer; *Biomedical Engineering

Identifiers: Bioheat Transfer; Cancer Therapy; Rapid Hyperthermia

14/5/23 (Item 1 from file: 36) [Links](#)

MetalBase

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0004315962 IP Accession No.: A2004-14-8140N-022

High energy impact on woven laminates

Author: Lopez-Puente, J.; Zaera, R.; Navarro, C.

Dept. of Continuum Mechanics & Structural Anal., Carlos III Univ. of Madrid, Spain

Conference: J. Phys. IV, Proc. (France), 7th International Conference on Mechanical and Physical Behaviour of Materials under Dynamic Loading , Porto, Portugal , 8-12 Sept. 2003

Publ: EDP Sciences , Sept. 2003

Journal de Physique IV (Proceedings) , 639-44 ,
2003

ISSN: 1155-4339

Country of Publication: France

Refs.: 11

Document Type: Conference Paper (PA); Journal Paper (JP)

File Segment: INSPEC

Abstract

Language: English

Abstract: The influence of high velocity impacts on CFRPs was studied by launching Spherical steel masses, at velocities from 60 m/s to 550 m/s, against carbon fiber/epoxy woven laminates. The extension of the damage induced in the laminate was measured by C-Scan. Finite element numerical simulation of the impact test used a failure model based on the Chang-Chang model. A comparison was made of the damaged areas resulting from non-destructive inspection of the specimens and those predicted by numerical simulation. To conclude the analysis, an analytical model developed by Cantwell-Morton was used to calculate the residual velocity of the projectile after perforation. The

residual velocities predicted by numerical and by analytical models, were also compared.

Descriptors: carbon fibre reinforced plastics; finite element analysis; fracture; impact (mechanical); impact testing; laminates; projectiles

Identifiers: high energy impact; woven laminates; carbon fiber reinforced plastic; spherical steel masses; carbon fiber/epoxy woven laminates; damage; C-Scan; finite element numerical simulation; impact test; failure model; Chang-Chang model; nondestructive inspection; analytical model; residual velocity; projectile; perforation; analytical models; 60 to 550 m/s; C

INSP

2004 Institute of Electrical Engineers

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^ 14/5/24 (Item 1 from file: 63) [Links](#)

Transport Res(TRIS)

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00729373 DA

TITLE: DATA AND METHODS FOR ESTIMATING THE SEVERITY OF MINOR IMPACTS

Author: BAILEY, MN; WONG, BC; LAWRENCE, JM

Corporate Source: SOCIETY OF AUTOMOTIVE ENGINEERS, INC., 400 COMMONWEALTH DRIVE , WARRENDALE, PENNSYLVANIA, 15096-0001,

Journal: SAE PUBLICATION SP-1083. ACCIDENT RECONSTRUCTION: TECHNOLOGY AND ANIMATION V. PROCEEDINGS OF THE INTERNATIONAL CONGRESS AND EXPOSITION, FEBRUARY 27-MARCH 2, 1995, DETROIT, MICHIGAN, USA (SAE TECHNICAL PAPER 950352) Pag: 139-76

Publication Date: 19950200 Publication Year: 1995

Language: ENGLISH Subfile: IRRD (I)

IRRD Document Number: 882401

ISBN: 1-56091-633-8

References: 24

Data Source: Transport Research Laboratory (TRL)

Abstract: Front, rear, lateral and side-swipe collisions were staged to correlate passenger vehicle damage to motion. Data from the staged collisions are used to develop severity-prediction methods for the four collision types. Human volunteers were present in many of the vehicles tested. Their responses, and the responses of human volunteers to staged impacts in other studies, are discussed in terms of impact severity. For front and rear impacts data are presented that correlate the post-impact condition of bumper systems to impact severity. A method for computing velocity change for vehicle to vehicle collisions from vehicle to barrier data is presented. Data from staged low-speed lateral collisions correlate target and bullet vehicle damage to linear and angular velocity change, impact location, pavement friction and collision force. For staged side-swipe collisions, damage details are correlated to the target vehicle acceleration-time history. The vehicle motion is characterized as a vibration dose. For the covering abstract of the conference see IRRD 882390.

Descriptors: CONFERENCE; RECONSTRUCTION (ACCID); SEVERITY (ACCID, INJURY); FORECAST; METHOD; HEAD ON COLLISION; REAR END COLLISION; SIDEWAYS COLLISION; DAMAGE; BUMPER; DATA BANK; SPEED; LOCATION; COEFFICIENT OF

FRICITION; ACCELERATION; MATHEMATICAL MODEL; MODEL (NOT MATH); CAR; USA

14/5/25 (Item 1 from file: 95) [Links](#)

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01704135 20021202299

Numerical modeling of high velocity impact on CFRPs at low temperature

(Numerische Modellierung von Hochgeschwindigkeitsimpakts auf CFK-Strukturen bei niedrigen Temperaturen)

Lopez-Puente, J; Zaera, R; Navarro, C

Univ. Carlos III de Madrid, E

Behaviour of Materials at High Strain Rates, Numerical Modelling, 14th Dymat Tech. Meeting, Sevilla, E, 14-15 Nov, 2002 , 2002

Document type: Conference paper Language: English

Record type: Abstract

ISBN: 2-9517947-1-1

Abstract:

CFRP laminates are susceptible to damage after impact. It is often difficult to localize the damage, which can have a strong influence on the mechanical properties of structural components. This explains the interest of studying the parameters that affect the type and the extension of the damage. Our study of the effect of impact velocity and temperature on the mechanical response of CFRP laminates shows that low temperatures detract from the impact behaviour of the laminate as a result of high in-plane thermal stresses. Our tests showed a damage saturation effect as the velocity increased above the ballistic limit; in this velocity range, temperature has no influence on damage extension. For aeronautical and aerospace applications, in which velocities can exceed those considered in this paper, the damage extension could well be determined from impact tests at room temperature. The Chang-Chang model predicts realistic damage trends in a CFRP laminate subjected to high velocity impact. The ballistic limit is well reflected in this numerical model.

Descriptors: TEMPERATURE; INERTIA; BEND LOADING; BULLET; SPEED; FEA--FINITE ELEMENT ANALYSIS; ERROR SOURCE; ELASTIC MODULUS

Identifiers: TIEFTEMPERATUR IMPAKT; KOHLENSTOFFASERVERSTAERKTER KUNSTSTOFF; CFK-Struktur; Impakt; Schadensmodellierung

14/5/26 (Item 2 from file: 95) [Links](#)

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01638968 20020501065

On site creep detection by measurement of sound velocity. Results of the VGB research project 171 "Non-destructive damage detection"

(Schallgeschwindigkeitsmessung zum Nachweis von Zeitstandschaedigung am Bauteil)

Kellerer, E

TU Muenchen, D

VGB PowerTech, v82, n4, pp106-109 , 2002

Document type: journal article Language: English

Record type: Abstract

ISSN: 1435-3199

Abstract:

Die elastischen Eigenschaften eines Werkstoffes koennen durch die Messung der Schallgeschwindigkeit bestimmt werden. Untersuchungen an Proben und an Bauteilen haben gezeigt, dass sowohl rein thermisch verursachte Gefuegeveraenderungen, als auch die Entstehung von Zeitstandschaedigung zu einer Veraenderung der Schallgeschwindigkeit fuehren. Dabei sind zwei gegenlaeufige Einfluesse festzustellen. Zum einen fuehrt die thermische Auslagerung des Werkstoffs zu einer Erhoehung der Schallgeschwindigkeit. Dies aeussert sich darin, dass die Schallgeschwindigkeit eines vergueteten Stahls im Neuzustand am niedrigsten ist und mit zunehmender Betriebsdauer ansteigt, solange keine Zeitstandschaedigung auftritt. Zum anderen fuehrt die Bildung von Zeitstandsporen zu einer Abnahme der Schallgeschwindigkeit. Die dieser Beobachtung zugrunde liegenden Messungen wurden an Bauteilen aus dem Werkstoff X20CrMoV12-1 nach unterschiedlichen Betriebszeiten und mit unterschiedlichen Schaedigungsgraden durchgefuehrt. Eine zusammenfassende Bewertung zeigt, dass sich Zeitstandschaedigung anhand einer Abnahme der Schallgeschwindigkeit nachweisen laesst, wenn als Referenzwert die erhoehte Schallgeschwindigkeit des ungeschaedigten Werkstoffs nach der entsprechenden Betriebsdauer herangezogen wird. Ein Vergleich mit der niedrigeren Schallgeschwindigkeit des Neuzustandes wuerde hingegen zu falschen Schluessen fuehren. Die Durchfuehrung der Messungen erfolgte mit einem Verfahren, welches im Rahmen eines VGB-Forschungsprojekts an der TU Muenchen entwickelt wurde und welches insbesondere fuer die Anwendung am Bauteil vor Ort geeignet ist. Hierbei wird die Schallgeschwindigkeit an der Bauteiloberflaeche laengs einer Strecke von rund 50 bis 100 mm Laenge mit Hilfe von Oberflaechenwellen gemessen. Die Eindringtiefe der Wellen kann ueber die Wahl der Frequenz eingestellt werden, um ausgehend von der Oberflaeche unterschiedliche Schichtdicken bei der Messung zu erfassen. Durch aufeinanderfolgende Messungen an ein und derselben Stelle, mit zunehmender Eindringtiefe, kann die Hoehe der Schallgeschwindigkeit an der Oberflaeche und eine eventuelle Veraenderung in die Tiefe infolge eines Schaedigungsgradienten bestimmt werden.

Descriptors: RESIDUAL LIFETIME; SOUND VELOCITY MEASUREMENT; CREEP RUPTURE TEST; LONG TIME RUPTURE STRENGTH; DAMAGE; LONG TERM INVESTIGATIONS; MICROSTRUCTURAL CHANGE; HEAT TREATABLE STEEL; OPERATING TIME--WORKING TIME; RESEARCH PROJECTS; MECHANICAL COMPONENTS TESTING; SURFACE; POWER PLANTS; DAMAGE MECHANISM

Identifiers: Bauteil; Zeitstandschaedigung; Schallgeschwindigkeitsmessung

14/5/27 (Item 3 from file: 95) [Links](#)

Fulltext available through: [STIC Full Text Retrieval Options](#)

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01228398 I98072307300

Cylindrical wave of reflection and conduction in IR transparent BaF(ind 2) single crystal excited by 2.5 μ s duration pulse of CO(ind 2) laser

Kudriavtsev, EM; Guignard, F; Inglesacis, G; Autric, M

P.N. Lebedev Phys. Inst., Acad. of Sci., Moscow, Russia

29th Annual Boulder Damage Symposium. Laser-Induced Damage in Optical Materials: 1997, 6-8 Oct. 1997, Boulder, CO, USA Proceedings of the SPIE - The International Society for Optical Engineering, v3244, n2, pp315-318, 1998

Document type: Conference paper Language: English

Record type: Abstract

ISSN: 0277-786X

Abstract:

Experiments on optical damage testing with the help of the 2.5 μ s, approximately 0.1 J single pulse of a 10.6 μ m CO(ind 2) laser showed the appearance of cylindrical geometry WRC in BaF(ind 2) single crystal approximately 50% transparent for this radiation. The reflection variations of the He-Ne beam transmitted through the sample at the 30 degrees angle to the IR laser axes and crossing it were measured. The nonequilibrium heating of the sample along the IR beam axes produced the heat lens and as a consequence the focusing of the He-Ne beam. The cylindrical WRC cross the focused He-Ne beam area and it gives the well pronounced bell shape peak, additional to the analogous reflection variation records made at conditions where He-Ne beam did not cross the IR laser axes. The time of the focused He-Ne beam crossing by WRC is 40 ms, which corresponds to a approximately 0.6 mm diameter of the focused beam of the WRC with a component velocity of approximately 1.6 cm/s. One can made conclusions about the local optical constants changing inside the solid sample by the help of reflection variations in WRC. This work was sponsored by RFBR (Russia).

Descriptors: BARIUM COMPOUNDS; OPTICAL CONSTANTS; REFLECTING POWER; BARIUM FLUORIDE; MONOCRYSTAL; CARBON DIOXIDE LASERS; BEAM FOCUSING; CARBON DIOXIDES; LASER BEAM EFFECT; OPTICAL TRANSPARENCY

Identifiers: ZYLINDRISCHE WELLE; INFRAROTDURCHLAESSIGER WERKSTOFF; PRUEFUNG DER OPTISCHEN SCHAEDIGUNG; HELIUM NEON STRAHL; 3 MIKROSEKUNDEN BEREICH; 10 MIKROMETER BEREICH; 40 MILLISEKUNDEN BEREICH; 2 ZENTIMETER/SEKUNDE BEREICH; 600 MIKROMETER BEREICH; HELIUM NEON SYSTEM; OPTISCHE SCHAEDIGUNG; Bariumfluorid; optische Schaedigung; CO2-Laser

14/5/28 (Item 4 from file: 95) [Links](#)

TEME-Technology & Management

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00907427 M95086370569

Cavitation erosion, hydrodynamic scaling laws, practical method of long term damage prediction

(Kavitationserosion, hydrodynamische Massstabsregeln, eine praktische Methode zur langfristigen Schadensvorhersage)

Lecoffre, Y

YLec Consultants, Saint Ismier, F

CAV 95, Int. Symp. on Cavitation, Proc., Deauville, F, May 2-5, 1995, 1995

Document type: Conference paper Language: English

Record type: Abstract

Abstract:

This paper presents the main steps of a method of prediction of cavitation damage based on the hydrodynamic similarity of cavitating flows. It is shown that a consequence of this similarity is that the density of impacts obtained on model can be extrapolated to full scale conditions, taking into account changes of scale, velocity, material and fluid. These similarity laws have been experimentally verified using water at two different scales, sodium and mercury flows. Further assumptions based on available experimental results have been made which concern the histograms of pits' dimensions. It was supposed that these histograms could also be extrapolated from model to full scale. Recent experiments, still to be published, conducted by ACB CERG confirm this hypothesis. The practical consequence of these laws is that the prediction of cavitation damage can be done by running model tests of short duration, typically one hour. The histogram obtained, measured by specific optical methods can be extrapolated to full scale under certain conditions. This full scale histogram is finally experimentally reproduced at high rate by means of a cavitation simulator, the 'Veine Tourbillon'. Despite the great number of assumptions made and the fact that many phenomena are still unexplained, the results obtained fit almost perfectly the scaling laws at least for the type of cavitation studied. It is thought that this method could become a standard procedure in cavitation testing of hydraulic components such as turbines, pumps, valves or propellers.

Descriptors: CAVITATION; HISTOGRAMS; FORECAST; DAMAGE ANALYSIS; SCALE--MEASURE; LAW OF SIMILIARITY; LIQUID FLOW; HYDRARGYRUM; MODEL SIMULATION; DURATION; PITTING--SCALING OFF; SODIUM; FLOW FIELD; DAMAGE PREVENTION; WEAK POINT TESTING; MODEL TEST; HOLDING TIME; EXAMINATION METHOD

Identifiers: Kavitation; Aehnlichkeitsgesetz; Schadensvorhersage; Massstab

14/5/29 (Item 5 from file: 95) [Links](#)

TEME-Technology & Management

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00765390 W94046078404

Real-time ultrasonic investigation of fiber-matrix debonding in ceramic-matrix composite

(Echtzeit-Ultraschalluntersuchung von Faser-Matrix-Abloesungen in Verbunden mit Keramikmatrix)

Wooh, S-C; Daniel, IM

Northwestern Univ., Evanston, USA

Review of Progress in Quantitative Nondestructive Evaluation. Proceedings of the 19th Annual Conference, La Jolla, USA, 19.7.-24.7.1992 , 1993

Document type: Conference paper Language: English

Record type: Abstract

ISBN: 0-306-44483-6

Abstract:

A unidirectional silicon carbide/glass ceramic composite was investigated by ultrasound in an attempt to correlate fiber-matrix debonding with the change in velocity of the polarized shear wave in the plane transverse to fibers. Ultrasonic methods were developed for real-time monitoring of damage evolution under tensile loading. The stress-strain curve was predicted analytically and shows a good agreement with the measurement. The transverse shear modulus calculated from wavespeed measurements was particularly sensitive to fiber-matrix debonding. Ultrasonic attenuation shows good qualitative agreement with the failure

mechanisms and the combination of attenuation and wavespeed would be a useful method to study failure mechanisms. The effect of friction on debonding growth will be further investigated.

Descriptors: NDT--NONDESTRUCTIVE TESTING; ULTRASONIC TESTING; DELAMINATION; FIBER REINFORCED MATERIALS; CERAMICS; SILICON CARBIDE; CERAMIC FIBRES ; SOUND VELOCITY MEASUREMENT; TRANSVERSAL WAVES; POLARIZATION; REAL TIME METHOD; STRESS STRAIN DIAGRAM; TENSION TEST; DAMAGE; COMPOSITE MATERIALS; FIBER REINFORCEMENT; ACOUSTIC VELOCITY; MEASURABLE VARIABLE; COULOM MODULUS; FIBER REINFORCED CERAMICS; GLASS CERAMICS

Identifiers: FASER MATRIX ABLOESUNG; Keramikmatrix-Verbund; Ultraschallpruefung

~~Non- Patent Literature Abstracts cont.

[File 34] SciSearch(R) Cited Ref Sci 1990-2008/Dec W1
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[File 92] IHS Intl.Stds.& Specs. 1999/Nov
(c) 1999 Information Handling Services. All rights reserved.
**File 92: This file is closed.*

[File 99] Wilson Appl. Sci & Tech Abs 1983-2008/Oct
(c) 2008 The HW Wilson Co. All rights reserved.

[File 434] SciSearch(R) Cited Ref Sci 1974-1989/Dec
(c) 2006 The Thomson Corp. All rights reserved.

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Set      Items  Description
S1      2112685  S DELTA OR CHANGE OR DIFFERENCE OR VARIANCE OR
RAPID??
S2       456032  S VELOCITY OR ACCELERATION OR MOMENTUM
S3      3427665  S ESTIMATE? ? OR ESTIMATING OR PREDICT??? OR
APPROXIMAT??? OR BALLPARK OR GAUG??? OR PROJECT??? OR ASSESS?
S4       588342  S DAMAGE? ? OR DESTRUCTION OR DEVASTATION OR
WRECKAGE OR SEVERITY
S5       17581   S S1 (10N) S2
S6       43693   S S3 (10N) S4
S7        46     S S5 (S) S6
S8        40     RD (unique items)
S9        30     S S8 NOT PY>2003
S10       4      S S9 AND (CAR OR CARS OR AUTO OR AUTOS OR
AUTOMOBILE OR AUTOMOBILES OR VEHICLE OR VEHICLES)

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^10/5/1 (Item 1 from file: 34) [Links](#)

Fulltext available through: [STIC Full Text Retrieval Options](#)

SciSearch(R) Cited Ref Sci

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10299919 Genuine Article#: 508LW Number of References: 14

New algorithm and accelerometer locations for frontal crash discrimination

Author: Jeong HY (REPRINT) ; Kim YH

Corporate Source: Sogang Univ,Dept Mech Engn,1 Shinsoo Dong/Seoul 121742//South Korea/

(REPRINT); Sogang Univ,Dept Mech Engn,Seoul 121742//South Korea/

Journal: PROCEEDINGS OF THE INSTITUTION OF MECHANICAL ENGINEERS PART D-
JOURNAL OF AUTOMOBILE ENGINEERING , 2001 , V 215 , ND11 , P 1171-1178

ISSN: 0954-4070 Publication date: 20010000

Publisher: PROFESSIONAL ENGINEERING PUBLISHING LTD , NORTHGATE AVENUE,,
BURY ST EDMUNDS IP32 6BW, SUFFOLK, ENGLAND

Language: English Document Type: ARTICLE

Geographic Location: South Korea

Journal Subject Category: ENGINEERING, MECHANICAL; TRANSPORTATION SCIENCE &
TECHNOLOGY

Abstract: Several crash discrimination algorithms have been developed in order to have timely air bag deployment during frontal crashes. However, it is still challenging to have timely air bag deployment, especially during pole, underride, oblique and offset crashes. Therefore, in this paper, a new algorithm for frontal crash discrimination is proposed, with the summation of the absolute value of the deceleration change being used as a metric and with the metric and its threshold being processed as a function of the velocity change. The new algorithm was applied to frontal crashes of a minivan and a sports utility vehicle, and it resulted in timely air bag deployment for frontal crashes, including pole, underride, oblique and offset crashes. Moreover, it is proposed that an accelerometer be installed on each side of the rockers or pillars to assess the crash severity of each side and to deploy driver and passenger air bags at different times, especially during an asymmetric crash such as an oblique and an offset crash. As an example, the deceleration signals measured at the left and right B-pillar/rocker locations were processed through the algorithm, and earlier time-to-fires (TTFs) were obtained for the air bag on the struck side than for the air bag on the non-struck side.

Descriptors--Author Keywords: accelerometer location ; advanced air bag ; frontal crash discrimination

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09830418 Genuine Article#: 453FY Number of References: 10

Damage diagnosis using time series analysis of vibration signals

Author: Sohn H; Farrar CR

Corporate Source: Univ Calif Los Alamos Natl Lab,Engn Anal Grp, ESA EA,Los

Alamos//NM/87545

Journal: SMART MATERIALS & STRUCTURES , 2001 , V 10 , N3 (JUN) , P 446-451

ISSN: 0964-1726 Publication date: 20010600

Publisher: IOP PUBLISHING LTD , DIRAC HOUSE, TEMPLE BACK, BRISTOL BS1 6BE,
ENGLAND

Language: English Document Type: ARTICLE

Geographic Location: USA

Journal Subject Category: MATERIALS SCIENCE, MULTIDISCIPLINARY

Abstract: A novel time series analysis is presented to locate damage sources in a mechanical system, which is running in various operational environments. The source of damage is located by solely analyzing the acceleration time histories recorded from a structure of interest. First, a data normalization procedure is proposed. This procedure selects a reference signal that is 'closest' to a newly obtained signal from an ensemble of signals recorded when the structure is undamaged. Second, a two-stage prediction model (combining auto-regressive (AR) and auto-regressive with exogenous inputs (ARX) techniques) is constructed from the selected reference signal. Then, the residual error, which is the difference between the actual acceleration measurement for the new signal and the prediction obtained from the AR-ARX model developed from the reference signal, is defined as the damage-sensitive feature. This approach is based on the premise that if there were damage in the structure, the prediction model previously identified using the undamaged time history would not be able to reproduce the newly obtained time series measured from the damaged structure. Furthermore, the increase in residual errors would be maximized at the sensors instrumented near the actual damage locations. The applicability of this approach is demonstrated using acceleration time histories obtained from an eight degrees-of-freedom mass-spring system.

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^ 10/5/3 (Item 3 from file: 34) [Links](#)

Fulltext available through: [STIC Full Text Retrieval Options](#)

SciSearch(R) Cited Ref Sci

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04408650 Genuine Article#: TB084 Number of References: 0

(NO REFS KEYED)

CAN EMERGENCY PHYSICIANS CORRELATE BETWEEN VEHICLE DAMAGE AND VELOCITY CHANGE

Author: ROS SP; MARTENS CA; HERMAN BE; PROBST B; DOANWIGGINS L

Corporate Source: LOYOLA UNIV,MED CTR,DEPT PEDIAT,2160 S 1ST

AVE/MAYWOOD//IL/60153

Journal: PEDIATRIC EMERGENCY CARE , 1995 , V 11 , N5 (OCT) , P 277-279

ISSN: 0749-5161

Language: ENGLISH Document Type: ARTICLE

Geographic Location: USA

Subfile: SciSearch; CC CLIN--Current Contents, Clinical Medicine

Journal Subject Category: PEDIATRICS

Abstract: The objective to this study was to examine the ability of emergency physicians to correlate between vehicle damage and velocity change. Participants were five emergency medicine physicians at the Emergency Department, Loyola University Medical Center, Maywood, IL. Ten slides of passenger cars crashed at speeds between 22 and 70 mph by the Insurance Institute for Highway Safety were shown to study participants. Study subjects were asked to estimate vehicular velocity based on the visible damage. Only 23 (46%) of the estimates were within 10 mph of the vehicular speed at the time of the crash. The average error was 14.5 mph (range: -20 to +45 mph). Vehicular velocity was overestimated in 70% of the appraisals. We conclude that the ability of emergency physicians to correlate between vehicle damage and velocity change is limited. Underestimation of vehicular damage associated with low velocity accidents may result in misdiagnosis of severe injuries in motor vehicle accident victims.

Descriptors--Author Keywords: VELOCITY CHANGE ; VEHICLE DAMAGE

^ 10/5/4 (Item 4 from file: 34) [Links](#)

SciSearch(R) Cited Ref Sci

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01827788 Genuine Article#: JE067 Number of References: 19

TECHNICAL PARAMETERS INFLUENCING THE SEVERITY OF INJURY OF FRONT-SEAT, BELT-PROTECTED CAR PASSENGERS ON THE IMPACT SIDE IN CAR-TO-CAR SIDE COLLISIONS WITH THE MAIN IMPACT BETWEEN THE FRONT AND REAR SEATS (B-PILLARS)

Author: MILTNER E; WIEDMANN HP; LEUTWEIN B; HEPP HP; FISCHER R; SALWENDER HJ; FROBENIUS H; KALLIERIS D

Corporate Source: UNIV HEIDELBERG,INST FORENS MED,VOSSTR 2/W-

6900HEIDELBERG 1//GERMANY/

Journal: INTERNATIONAL JOURNAL OF LEGAL MEDICINE , 1992 , V 105 , N1 (JUL) , P 11-15

Language: ENGLISH Document Type: ARTICLE

Geographic Location: GERMANY

Subfile: SciSearch; CC CLIN--Current Contents, Clinical Medicine

Journal Subject Category: MEDICINE, LEGAL; PATHOLOGY

Abstract: Authentic car-to-car side collisions (n = 30) with the main impact area at the B-pillar were analyzed to find technical parameters corresponding with the injury severities of the front seat belt-protected car passengers on the impact side. EES (Energy Equivalent Speed) and DELTA-v (delta v, change in velocity) were highly significant predictors of the severity of thoracic and abdominal injuries and total injury severity coded according to the Abbreviated Injury Scale (AIS). At an EES or DELTA-v greater-than-or-equal-to 40 km/h all front-seat car passengers on the impact side sustained a total injury severity of Maximum AIS (MAIS) greater-than-or-equal-to 4 and died. Although a passenger could survive the crash without injury to one or more body regions up to the highest EES- and DELTA-v-values, at EES or DELTA-v greater-than-or-equal-to 40 km/h fatal injuries were sustained in at least one body region. At an EES greater-than-or-equal-to 35 km/h or a DELTA-v greater-than-or-equal-to 15 km/h no front-seat car passenger on the impact side remained uninjured.

Descriptors--Author Keywords: SIDE COLLISIONS ; FRONT PASSENGERS ; INJURY SEVERITY ; RECONSTRUCTION OF ACCIDENTS

Identifiers-- KeyWords Plus: MASS

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~~Non- Patent Literature Full - Text

[File 625] American Banker Publications 1981-2008/Jun 26

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**File 625: This file no longer updates. Use Newsroom Files 989 and 990 for current records.*

[File 637] Journal of Commerce 1986-2008/Dec 22

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[File 169] Insurance Periodicals 1984-1999/Nov 15

(c) 1999 NILS Publishing Co. All rights reserved.

**File 169: This file is closed (no longer updating).*

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Set      Items  Description
S1       129798  S DELTA OR CHANGE OR DIFFERENCE OR VARIANCE OR
RAPID??
S2        9728   S VELOCITY OR ACCELERATION OR MOMENTUM
S3       215386  S ESTIMATE? ? OR ESTIMATING OR PREDICT??? OR
APPROXIMAT??? OR BALLPARK OR GAUG??? OR PROJECT??? OR ASSESS?
S4        36403  S DAMAGE? ? OR DESTRUCTION OR DEVASTATION OR
WRECKAGE OR SEVERITY
S5         281   S S1 (10N) S2
S6        3034   S S3 (10N) S4
S7          0    S S5 (S) S6
S8          0    S S5 AND S6
S9         907   S S1 (S) S2
S10        318   S S9 (S) S3
S11         20   S S10 (S) S4
S12        17   RD (unique items)

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12/3,K/1 (Item 1 from file: 637) [Links](#)

Journal of Commerce

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0006354086

No Break in the Storm

AIR CARGO WORLD (AC) - December 1, 2008

By: JAN MAURITS DE JONGE

Section: Europe Page: 14

Word Count: 4208

...two custom built tools-a carbon calculation system and a carbon management system-DHL can assess the carbon emissions created by a customer's individual shipment moving through our network," he says. This allows us to identify the most appropriate abatement projects, coordinate the offsetting of emissions, and then, in conjunction with an independent third party, issue... ..can then use these certificates to prove their contribution to countering the effects of climate change. He adds that customers pay a premium for using the GoGreen service.

We have had... ..efficiency initiatives.

President-elect Obama has made it quite clear that he ranks tackling climate change as one of his most important tasks," says Dr. Kerschbaumer. "We fully intend to support... ..harvesting system at its new central European hub in Leipzig, Germany, to capture and store approximately 3,000 cubic meters of water. The recycled water is used to wash its aircraft... ..Airport alone posted growth of 1.2%. ... London's Luton, Gatwick, and Manchester Airports shed approximately 50 cargo and ground-handling staff as part of a 600-employee worldwide layoff at... ..far below the annual average of 7.4% from 2002 to 2007. And it is rapidly becoming clear that the road to recovery is likely to be long and bumpy. Based... ..in an otherwise difficult economic environment.

ut before we dive into the details of this projection, let's look at the following:

What really happened in 2008

Four major trends that... ..to protect profitability.

owever, fuel costs were not sufficient to force the industry shake-out predicted by some. Only two major cargo carriers went bankrupt in 2008, representing less than 0... ..for this absence of growth. In 2012 alone, China's air trade growth gap (the difference between the nation's air trade growth rate and its 20% annual average in 2002... ..products-many of them driven by the consumer electronics boom of the last decade.

he change in air penetration varies by commodity group. For products such as fashion apparel and accessories... ..air freight by 6 to 9 percentage points in 2005-2006, by 2007 the growth difference was less than 3%.

rade lane imbalances have long been a curse for the air... ..With respect to the underlying consumption and production imbalances, the picture is not expected to change significantly in the next five years. Although China's imports likely will grow quickly due... ..IATA. Although the lofty prices reached in the first half of 2008 did not structurally change the air cargo industry, there is no guarantee that the weaker players will remain unchanged... ..expected to recover in 1-2 years.

However, the global economy has already sustained great damage as a result. The outlook for the U.S., Europe and Japan is discouraging enough... ..growth will be just 5%-less than half that for the years preceding 2008. The rapid deterioration of the global financial markets undercut growth at the start of the forecast period... ..directions over the last few years. Within this trade lane, China has lost some growth momentum, but it remains a growth driver of some significance, with a forecast of 7.7... ..Chile will show double-digit growth. Economic growth in Asia and Australasia (excluding

Japan) is projected to decelerate to 5% in 2009-down from 8.3% in 2007 and 6.5...

Caption:

12/3,K/2 (Item 2 from file: 637) [Links](#)
Journal of Commerce
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0006351106
The peak?

PACIFIC SHIPPER (PS) - September 15, 2008
By: JOHN D. BOYD
Section: FEATURE Page: WP
Word Count: 1755

Text:

...weaker times the rest of the year. Finkbiner said it is still too early to predict some factors, such as whether post-Olympics China will suddenly push out a lot more... ..m Gentle said. Barring some big demand push such as rebuilding work after major hurricane damage, lthereks not enough out there to push a big blip (in freight traffic) through the... ..more traditional fall intermodal peak.m He said BNSFks capital investments and initiatives to boost velocity lshould enable us to handle any peak demand.m Some key rail sources think the... ..up in one or two. At the U.S. retail container ports he surveys, Bingham projects that September volume will be 7 percent below the same month last year. Also, lwekve... ..West. Of all the ports he tracks, only Savannahks traffic will grow this year, he projects, but its 4.2 percent import rise is a sharp braking from a 24 percent jump in 2007. Yet the recent turn in the dollar p rising for a change instead of falling p makes Bingham think import volumes will be growing by the end...

12/3,K/3 (Item 3 from file: 637) [Links](#)
Journal of Commerce
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0006350770
The Peak Goes Flat

TRAFFIC WORLD (TW) - September 8, 2008
By: JOHN D. BOYD - ASSOCIATE EDITOR
Section: RAIL Page: WP
Word Count: 1757

Text:

...weaker times the rest of the year. Finkbiner said it is still too early to predict some factors, such as whether post-Olympics China will suddenly push out a lot more... ..season," Gentle said. Barring some big demand push such as rebuilding work after major hurricane damage, "there's not enough out there to push a big blip (in freight traffic) through... ..more traditional fall intermodal peak." He said BNSF's capital investments and initiatives to boost velocity "should enable us to handle any peak demand." Some key rail sources think the only... ..up in one or two. At the U.S. retail container ports he surveys, Bingham projects that September volume will be 7 percent below the same month

last year. Also, "we... ..Of all the ports he tracks, only Savannah's traffic will grow this year, he projects, but its 4.2 percent import rise is a sharp braking from a 24 percent jump in 2007. Yet the recent turn in the dollar - rising for a change instead of falling - makes Bingham think import volumes will be growing by the end of...

12/3,K/4 (Item 4 from file: 637) [Links](#)
Journal of Commerce
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0006348062
Rails Begin Mop Up

TRAFFIC WORLD (TW) - June 30, 2008
By: JOHN D. BOYD
Section: RAIL Page: 27
Word Count: 741

Text:

...be five or six weeks before we get the railroad fully up, in terms of velocity. We've got a little damage with signals and some damage to infrastructure." UP also filed a notice with the Securities and Exchange Commission that said... ..company's second quarter earnings toward the bottom half" of that range. But Young's estimates about the time it would take to get the full railroad back up to speed... ..the main reason is the floods, he is decreasing both second-quarter and full-year estimates for a number of railroads given the various pressures they face. While UP was widely... ..Among other major lines, Canadian National Railway and Canadian Pacific Railway have also suffered flood damages that forced them to detour or delay shipments, Norfolk Southern invoked contract terms to lift... ..traffic with western carriers. Several short-line railroads in the area also have suffered considerable damage and are likely to take longer to rebuild than the bigger, deeper-pocketed Class I... ..a mostly north-south short line that runs from Mason City, Iowa, down to Cedar Rapids - saw a big chunk fall out of its system when rail bridges it used were torn away by flood waters at Waterloo and Cedar Rapids. That short line counts tractor manufacturer John Deere and ethanol refiner ADM among its shippers...

12/3,K/5 (Item 5 from file: 637) [Links](#)
Journal of Commerce
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0006341648
Opinion: BIS stumbles with jChina Rulek

JOURNAL OF COMMERCE (JC) - January 24, 2008
By: DONALD ALFORD WEADON JR. AND CAROL A. KALINOSKI / THE JOURNAL OF COMMERCE ONLINE
Edition: Web Section: TRADE Page: WP
Word Count: 2128

Text:

...complying with U.S. law. Numerous comments filed in 2006 on the proposed rule predicted that it would have a dramatic, adverse impact on trade and finance between China and... ..trade, and

opened BIS up to criticism for supporting Chinese proliferators of weapons of mass destruction. Chinese opposition to the rule China opposed the rule from the start. In our private... ...a BIS export license or to design out U.S. parts and components in large projects. Because it restricts commodities widely available from Asia, Europe, Israel and even China, and because... ...Technology and Strategic Trade Development. BIS alleges that the guidelines continue the positive momentum of ongoing bilateral discussions and provide a framework for future discussions on export control issues... ...SED-JCCT meeting is far less than an agreement to agree; rather, it represents no change in position by either nation. China, unwilling to spark confrontation with the U.S. before... ...domestic audience. The VEU attacked Finally, as the New Year dawned, the Washington-based Wisconsin Project on Nuclear Arms Control released a controversial study, In China We Trust: Lowering U.S... ...with a demonstrable record of using sensitive technologies responsibly, in a position that the Wisconsin Project study documents as being highly questionable. BIS was recently quoted as rejecting the Wisconsin Project report while curiously pledging to examine it in greater detail. Revisions dilute national security protections...

12/3,K/6 (Item 6 from file: 637) [Links](#)
Journal of Commerce
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0006337820
Asian economies weathering US housing downturn

PACIFIC SHIPPER (PS) - October 8, 2007
By: ALAN M. FIELD
Section: transpacific Page: WP
Word Count: 1389

Text:

...percent this year, 6.5 percent in 2008 and 6.3 percent in 2009, Andrews predicts. The key U.S. exports to Northeast Asia last year included wastepaper and paperboard, mixed... ...Insight. Andrews puts that number at a slightly lower rate of 11.1 percent. Lee predicts that Chinaks economy will expand 11 percent in 2007. The total global value of Chinese... ...banks in Asia were not very exposed to the U.S. mortgage market, limiting the damage from the subprime crisis. Oddly enough, U.S. containerized exports to South Korea are growing... ...dollar. Lee said the yuan has been moving slowly because the government fears that any rapid appreciation would lead to economic volatility. There are conflicting views about the yuan within the... ...ultimately rises, and how that affects trans-Pacific trade. Chinaks central bank wants a steeper acceleration of the yuan to deal with the excessive pressure on Chinaks money supply growth, and... ...commercial integration, according to a recent report by IMA Asia Pty. Ltd., an international market assessment firm. Taiwan's economy would gain enormously from faster and more complete commercial integration with China... ...administration. Taiwan's GDP grew by a modest 4.7 percent last year. IMA Asia projects 4.4 percent growth for 2007 and 4.8 percent for 2008. Nevertheless, U.S... ...and are expected to grow 20.7 percent in 2007, Andrews said. Even after a projected slowdown, his forecast is for 19.3 percent growth in 2008 and 18.5 percent...

12/3,K/7 (Item 7 from file: 637) [Links](#)
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0006337761

Still going strong

JOURNAL OF COMMERCE (JC) - October 8, 2007

By: ALAN M. FIELD

Edition: JoC Week Section: SPEC2 Page: 16

Word Count: 1380

Text:

...percent this year, 6.5 percent in 2008 and 6.3 percent in 2009, Andrews predicts. The key U.S. exports to Northeast Asia last year included wastepaper and paperboard, mixed... ...Insight. Andrews puts that number at a slightly lower rate of 11.1 percent. Lee predicts that China's economy will expand 11 percent in 2007. The total global value of... ...banks in Asia were not very exposed to the U.S. mortgage market, limiting the damage from the subprime crisis. Oddly enough, U.S. containerized exports to South Korea are growing... ...dollar. Lee said the yuan has been moving slowly because the government fears that any rapid appreciation would lead to economic volatility. There are conflicting views about the yuan within the... ...rises, and how that affects trans-Pacific trade. China's central bank wants a steeper acceleration of the yuan to deal with the excessive pressure on China's money supply growth... ...commercial integration, according to a recent report by IMA Asia Pty. Ltd., an international market assessment firm. "Taiwan's economy would gain enormously from faster and more complete commercial integration with... ...administration." Taiwan's GDP grew by a modest 4.7 percent last year. IMA Asia projects 4.4 percent growth for 2007 and 4.8 percent for 2008. Nevertheless, U.S... ...and are expected to grow 20.7 percent in 2007, Andrews said. Even after a projected slowdown, his forecast is for 19.3 percent growth in 2008 and 18.5 percent...

12/3,K/8 (Item 8 from file: 637) [Links](#)

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0006336787

Hitting the Brakes

TRAFFIC WORLD (TW) - September 17, 2007

By: JOHN D. BOYD

Section: RAIL Page: 26

Word Count: 741

Text:

Copyright 2007, Traffic World, Inc. The Federal Railroad Administration offered a rule change to spur freight railroads and shippers to voluntarily embrace a better braking technology, even as... ...producing an "uneven" rolling stop and "excessive in-train forces" that the FRA said can damage cargoes or cause accidents. The technology is a modified version, FRA said, of that developed... ...region because the greater control and stopping power allows tighter spacing, and increase average train velocity. All those factors could expand a railroad's freight-handling capacity, in an era when... ...freight cars with the new systems "costs about \$4,000 per car (and) we're estimating about \$40,000 for each locomotive." Already, though, carriers and shippers are interested. BNSF Railway... ...more than 400 railcars running with ECP systems. FRA officials said their research has not estimated how

many accidents, injuries or even deaths might be avoided with ECP brakes. But they...

12/3,K/9 (Item 9 from file: 637) [Links](#)
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0006333237
The Greening of Logistics

TRAFFIC WORLD (TW) - June 25, 2007
By: WILLIAM HOFFMAN - ASSOCIATE EDITOR
Section: LOGISTICS Page: WP
Word Count: 1626

Text:

...role of sustainability in business. And I also think this is moving and changing very rapidly." The push for sustainable practices in the supply chain comes from many corners. Congress, federal...
...Huntley said. "Not having to manufacture a billion pounds of polyethylene can make a big difference." Wal-Mart expects to see that difference soon. The world's largest retailer estimates it will save \$3.4 billion by having its suppliers cut packaging materials by just...
...Canadian suppliers this month it will start using what it calls a Packaging Scorecard to assess what the sustainability is of their packaging. "Making smarter, sustainable packaging choices is one of the best ways Wal-Mart and our suppliers can make positive environmental change," said Guy McGuffin, Wal-Mart Canada's vice president and sustainable packaging network leader. Mark...
...Staples' executives and logistics managers are thrilled with the fairly painless results of their sustainability project, Buckley said. "But there is an environmental benefit as well," he said. "A lot of...
...at Dow means fewer trucks and railcars of product, while maintaining packaging integrity means less damage to wrapped product that must be replenished with more manufacturing and transportation. Staples' warehouses, lit...
...for shippers, the relatively low-hanging sustainability fruit - climate-controlled buildings, reformulated products, software enhancing velocity through the supply chain - comes at a price. Still, said, Huntley, "I don't think...
...a fad," said Huntley. "I think there's a clear recognition that we need to change e because of limited resources, because of the impact of what we've been doing...

12/3,K/10 (Item 10 from file: 637) [Links](#)
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0006330850
Lca/csa International Joint Conference Special Report – Environmental Issues May Change Face of Great Lakes Shipping

CANADIAN SAILINGS (CS) - April 30, 2007
By: BRENT FREDERICK, ASSOCIATE EDITOR
Section: National and Regional Page: web
Word Count: 1231

Text:

...shipping in the Great Lakes," the LCA/CSA 70th annual International Joint Conference was told. "Change of some kind, potentially significant, is in the air," said Mark Ruge, a partner with...
...of

discharges from vessels," he said. "It's a very uncertain future. Although I cannot predict how it will come out, I can predict with some certainty that we are on the verge of significant environmental change for the shipping industry on the Great Lakes." Speaking on behalf of the Canadian Petroleum... ..per cent sulphur content by 2012 and 0.5 per cent by 2015 is "gaining momentum" in many countries. But studies have shown that an upgrade to marine diesel from marine... ..you play to protect human well-being helps influence policy-makers." She warned that climate change, and the increased severity of storms and dropping lakes levels that come with it, is a threat to shipping... ..for the economic crisis that is going to face us. There are opportunities with climate change. There are also risks. We're not really preparing our societal systems to the scenarios that are being painted around climate change. "Protection of this region is an investment in a revitalization economy. There is money to... ..past contamination. There is money to be made in innovative technologies. Do things completely new. Change the paragon. Change the way we do business."

12/3,K/11 (Item 11 from file: 637) [Links](#)
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0006295642
Clocking Pocketbook Pressure

TRAFFIC WORLD (TW) - March 15, 2004
By: JOHN D. SCHULZ
Section: SPEC Page: 18
Word Count: 1849

...cabs, everyone is looking for signs of the impact of the much-discussed HOS rule change that took effect Jan. 4. Many agree that the HOS revision is breathing new life... ..industry a winner" after his review of the early effects of HOS. "We are now predicting that almost all of the negative ramifications of HOS will be offset by either faster... ..by FMCSA, all industry and all aspects of transportation are supposed to be able to change to fit the whim of FMCSA's rule," he said. Truckers, says Newman, must have... ..most of the country this week. Fines range from \$550 to \$11,000, depending on severity and locale. "It's playing out pretty much like we thought," said Scott Arves, president... ..And winter weather always is a wild card for truckers. "It's too early to gauge exact costs because of weather in January and February and also because of strong freight... ..quarter. That was accomplished that through trailer pools, adding people at the dock to improve velocity on the dock. That's really what we want to see happen." Among smaller operators... ..out." Shippers are talking a lot about cooperation, "but we're not seeing that much difference in the way that warehouses work," Schnautz says. "It is still cheaper for them to...

Caption:

12/3,K/12 (Item 12 from file: 637) [Links](#)
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0006295554
UP in a Jam

TRAFFIC WORLD (TW) - March 8, 2004

By: JOHN GALLAGHER

Section: RAIL Page: 29

Word Count: 1055

...We are hopeful that a solid March performance will help us regain some of the momentum we lost earlier in the quarter. Once the difficult winter operating environment begins to improve...

Caption:

12/3,K/13 (Item 13 from file: 637) [Links](#)

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0006295133

Strike and Parry

TRAFFIC WORLD (TW) - June 23, 2003

By: KATHLEEN HICKEY

Section: TECH Page: 16

Word Count: 1752

...of J.D. Edwards common stock being \$14.33, for a total transaction value of approximately \$1.75 billion.

PeopleSoft and J.D. Edwards believe the amended terms of the transaction... "It represents a substantial threat to shareholder value and is designed to disrupt PeopleSoft's momentum," he said. Without PeopleSoft, there would be only two competitors in the market, SAP and... "its proposed merger with PeopleSoft. J.D. Edwards is seeking \$1.7 billion in compensatory damages and an unspecified amount in punitive damages. The California suit names Oracle and two of its executives, Ellison and Chuck Phillips, Oracle... "customers in the end, said Richardson. "Chances are, most PeopleSoft customers won't notice much difference if Oracle wins this fight. Oracle has stated that it plans to support these customers..."

Caption:

12/3,K/14 (Item 14 from file: 637) [Links](#)

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0006293956

Shippers, Today and Tomorrow

TRAFFIC WORLD (TW) - November 17, 2003

Section: FRONT Page: 10

Word Count: 7468

...lot of challenges. We've resized the league's staff and we've had a change in direction as we developed our Vision 2020 concept, moving out of a confrontational environment... "re familiar

with the recent hazmat rule that came out of RSPA (Research and Special Projects Administration). So there's another one that we've got to sit down and analyze... ...area of policy, the opportunity is very simple: you can either participate in developing the change or you can have it done to you. The opportunity is to get in there and be a part of effecting the change. And that's what the league's been so successful at since it started in... ...those building blocks are going to include what I call people-capital to continue that momentum.

What we're not going to do is we're not going to let the... ...And when you've got a year's horizon and you've got five-year projects, it's pretty difficult to plan in that horizon, to plan and staff accordingly. TW... ...that's ever read a highway bill -- the bill's about this long and demonstration projects get rather elaborate.

I think one of the focuses that the league must continue to...otherwise, stronger, more customer-focused, more innovative, and ultimately more profitable.

TP: Competition leads to change, and change leads to innovation, and the league has never wavered from that.

TW: Yet creating capacity... ...So, is there a Hobson's Choice there?

TP: Competition by itself would lead to change. The innovation piece would also be part of that change. So when you talk about, instead of building another line down in Houston that costs... ...current provisions of the rail competition bill in order to affect some kind of a change?

JF: We're open to any discussion with the railroads. We've talked to the... ...This isn't new. We've offered to sit down and talk with them about change, I still hold out a great deal of hope for them. I spent 13 years in the rail industry, I still have an affection for them. But it needs to change with the times and so far they haven't been willing to respond. But the... ...in the existing vehicles. And you have to do it safely and without any more damage to the road. You have tests using the existing axle strength that show you can do it with no greater damage than currently exists to the road structure. Do we want to have more trucks on... ...we want to have more stuff in the trucks?

TW: If this idea had gotten momentum in the past, wouldn't the railroads basically have killed it?

JF: It's an... ...We have to look in the mirror and realize that either you're going to change, and set it up for the next 100 years, or are we just going to...

Caption:

12/3,K/15 (Item 15 from file: 637) [Links](#)

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0006289177

Down for the Count

TRAFFIC WORLD (TW) - November 4, 2002

By: JOHN D. SCHULZ

Section: FRONT Page: 10

Word Count: 2586

...are pleased the Teamsters have finally seen fit to end this walkout and end the damage they have caused to those Overnite employees and their families who chose to support them... ...so sure "one more shot to the solar plexus," calling a strike, is going to change Overnite's anti-union mindset. More importantly, Hoffa tells Murphy, he doesn't want irate... ...the white flag in calling off the strike, it was clear the union was losing momentum at Overnite. At the end, fewer than 300 workers were on strike out of a... ...has 166 terminals nationwide.) Some 200 Overnite employees in Decatur,

Ala.; Marietta, Ga.; Cincinnati; Grand Rapids, Mich.; Minneapolis and Sacramento, Calif., recently voted to end their relationship at the IBT.

Some... ..the votes were embarrassingly against the Teamsters. The vote was 29-0 against at Grand Rapids, 34-1 against at Marietta, 67-2 against in Cincinnati and 24-1 against at... ..FedEx Freight or Richmond-based carrier Estes Express. But Krukowski warned the Teamsters have to change their tactics if they hope to win over workers at either of those significant LTL...cautious in its approach to purchasing equipment. Within the last 12 months, Overnite has bought approximately 580 used vans, 70 used sleepers, 290 forklifts and 1,000 pup trailers. Overnite currently...

Caption:

12/3,K/16 (Item 16 from file: 637) [Links](#)
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06278628
Operation Cleanup

TRAFFIC WORLD (TW) - April 9, 2001
By: JOHN GALLAGHER
Section: RAIL Page: 42
Word Count: 1683

...late last year to eliminate costs.

MultiModal comes to NS with a track record. Past projects include support work with the privatization of the Mexican railways, the Union Pacific-Southern Pacific... ..Central mergers, the Conrail split, and the aborted Burlington Northern Santa Fe-CN merger. All projects ultimately looked to reduce car handlings, increase car velocity and improve service reliability.

"The whole focus in the railroad business has been on trains... ..you have delay, no matter how efficient the terminal. There's also the potential to damage shipments in handling at the terminal, and the potential to miss connections."

NS and MultiModal... ..there are no firm plans on when the railroad will disclose further information on the project.

Among the strategies that MultiModal will look at in order to help NS achieve the...gain the value for their service, Kuehn says there needs to be a more radical change in how railroads are structured. "I think the railroads would be well served by dividing...

Caption:

12/3,K/17 (Item 17 from file: 637) [Links](#)
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06276366
Surface Reflections by Lawrence H Kaufman: If you can't beat 'em, embrace 'em

JOURNAL OF COMMERCE (JC) - December 28, 2000
By: JOC ONLINE
Edition: Web Section: EDIT Page: WP

Word Count: 1007

...fiddling with numbers concerning the cost benefits of the lock-and-dam system to justify projects that do not meet criteria for public investment.

Railroads are the one mode that can... ...the recent Southeast High Speed Rail Conference in Richmond, Va., I was struck by the difference in attendance. Conferences like this one used to draw rail fans who tended to have... ...regional Federal Reserve Bank. Any one of the panelists could have been a keynote speaker.

Momentum is building for increased public funding to develop designated high-speed rail corridors. States recognize... ...very Happy New Year. For shippers, may your freight consistently be delivered on time and damage free. For carriers, may you deliver your customers freight on time, damage free and receive a fair price for your service. For all of you who helped ...

Caption: